U.S. DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

ENVIRONMENTAL ASSESSMENT

For
Proposed Amendments to the 2015 – 2016 Hunt Plan
Of The
Visitor Service Plan
Minnesota Valley National Wildlife Refuge,
Bloomington, Minnesota

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TABLE OF CONTENTS

ENVIRONMENTAL ASSESSMENT
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MINNESOTA VALLEY NATIONAL WILDLIFE REFUGE

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1.0 PURPOSE OF THE PROPOSED ACTION

The Minnesota Valley National Wildlife Refuge (Refuge) was established by Congress in 1976 through the Minnesota Valley National Wildlife Refuge Act *(Public Law 94-466; October 8, 1976)* (Refuge Act). In general, its purposes are to (1) provide habitat for a large number of migratory waterfowl, fish, and other wildlife species; (2) provide environmental education, wildlife recreational opportunities, and interpretive programs for hundreds of thousands of Twin Cities residents; (3) protect important natural resource areas from degradation; and (4) protect the valley's unique social, educational, and environmental assets.

The purpose of this Environmental Assessment (EA) is to evaluate alternatives for the purpose of updating the Hunting Chapter of the Refuge's Visitor Service Plan. The Service's Regional Director will review the recommendations assessed in this EA and select one of the Alternatives presented. In doing so, the Regional Director also will determine whether this EA is adequate to support a Finding of No Significant Impact or whether an Environmental Impact Statement (EIS) will need to be prepared.

2.0 NEED FOR THE ACTION

The National Wildlife Refuge Improvement Act of 1997 (Improvement Act) directs refuges to provide six priority public uses when compatible with the purposes of the Refuge and the mission of the National Wildlife Refuge System (System). These priority uses are hunting, fishing, wildlife photography, wildlife observation, environmental education, and interpretation. The need for action, therefore, revolves around hunting as a priority use. The U.S. Fish and Wildlife Service (Service) guidance for implementing the Improvement Act not only encourages Refuge Managers to provide hunting where compatible but also to promote use of refuges for special hunts for youth, persons with disabilities, or other underserved hunting populations (605 FW 1.9C, 2.7M, 2.7N, USFWS, 2014). Because hunting is one of six priority uses for the Refuge, the 2015 Hunt Plan seeks to balance all of these uses over time and space.

The Service prepared its first hunting chapter for the Refuge shortly after the Refuge was established. That chapter included an EA that evaluated the possibilities and effects of a hunting program on all lands within the Refuge's congressionally authorized acquisition boundaries. The Refuge's Hunting Chapter and supporting documents were reviewed and updated in 1981, 1984, 1987, 1989, 1991, 2004, 2010, 2011, and 2012. Changes to the Refuge's hunting program were published in the Federal Register and the Code of Federal Regulations (50 CFR 32.42) as needed.

Since the first authorization in 1976 to establish a 9,500-acre Refuge, the approved acquisition boundary has been revised three times to total 24,210 acres. Currently, about 14,235 acres are managed by the Refuge (Figure 1). As the Refuge expands, lands are purchased from willing sellers. This has created a patchwork of ownership in some areas within the authorized acquisition boundary. In many instances the Service has been able to incorporate private lands within the acquisition boundary into Refuge programs via easements or other agreements.

In 2000, the Service reached a compensation agreement with the Metropolitan Airport Commission (MAC) for damages to the Refuge resulting from expansion of the Minneapolis/St. Paul International Airport. The MAC paid the Service approximately $26 million in mitigation funds to compensate the Refuge for damages associated to Refuge facilities and programs, to be administered by the Minnesota Valley National Wildlife Refuge Trust, Inc. (Trust). These monies are being used to replace the public use and wildlife values affected by aircraft overflights, by developing facilities, programs, and new Refuge units outside the impact zone of the airport. Consequently, the Trust is actively purchasing new lands within the authorized Refuge boundary. The Trust holds these lands until they can be officially transferred to Service ownership. Meanwhile, the Service manages these lands as part of the Refuge under a formal MOU.

The 2015-2016 Hunt Plan seeks to open new target species to hunting on certain Units and open new areas to general public hunting. As directed by Service Policy (605 FW 2.7 USFWS, 2014) we plan, manage, conduct, and evaluate refuge hunting programs in coordination with State fish and wildlife agencies on a consistent basis, in ways that conserve fish and wildlife and their habitats, ensure hunter and visitor safety, comply with applicable State and Federal laws and regulations, and promote respect for the resource. In addition, our regulations are consistent, to the extent practicable, with State regulations.

To initiate or expand hunting programs, the Service must publish in the *Federal Register* any proposed and final Refuge-specific regulations pertaining to hunting prior to implementing them (605 FW 2.9, USFWS, 2014). The regulations are only one element of a complete hunting program opening package which is comprised of the following documents: Refuge Hunting Chapter; compatibility determination; documentation pursuant to compliance with the National Environmental Policy Act of 1969, as amended (NEPA), and appropriate NEPA decision document; Endangered Species Act Section 7 evaluation; copies of letters requesting State involvement and the results of the request; draft news release; outreach plan; and draft Refuge-specific regulations to be included in 50CFR.

This environmental assessment serves as the NEPA document which analyzes the impacts of the proposed changes to the hunting program at Minnesota Valley National Wildlife Refuge for 2015 and beyond. The Preferred Alternative, as presented in this EA, outlines proposed changes to the 2015-2016 Hunt Plan. Proposed uses within the 2015-2016 Hunt Plan have been determined to be appropriate and compatible with the mission of the Refuge System and purposes for which the Refuge was established.

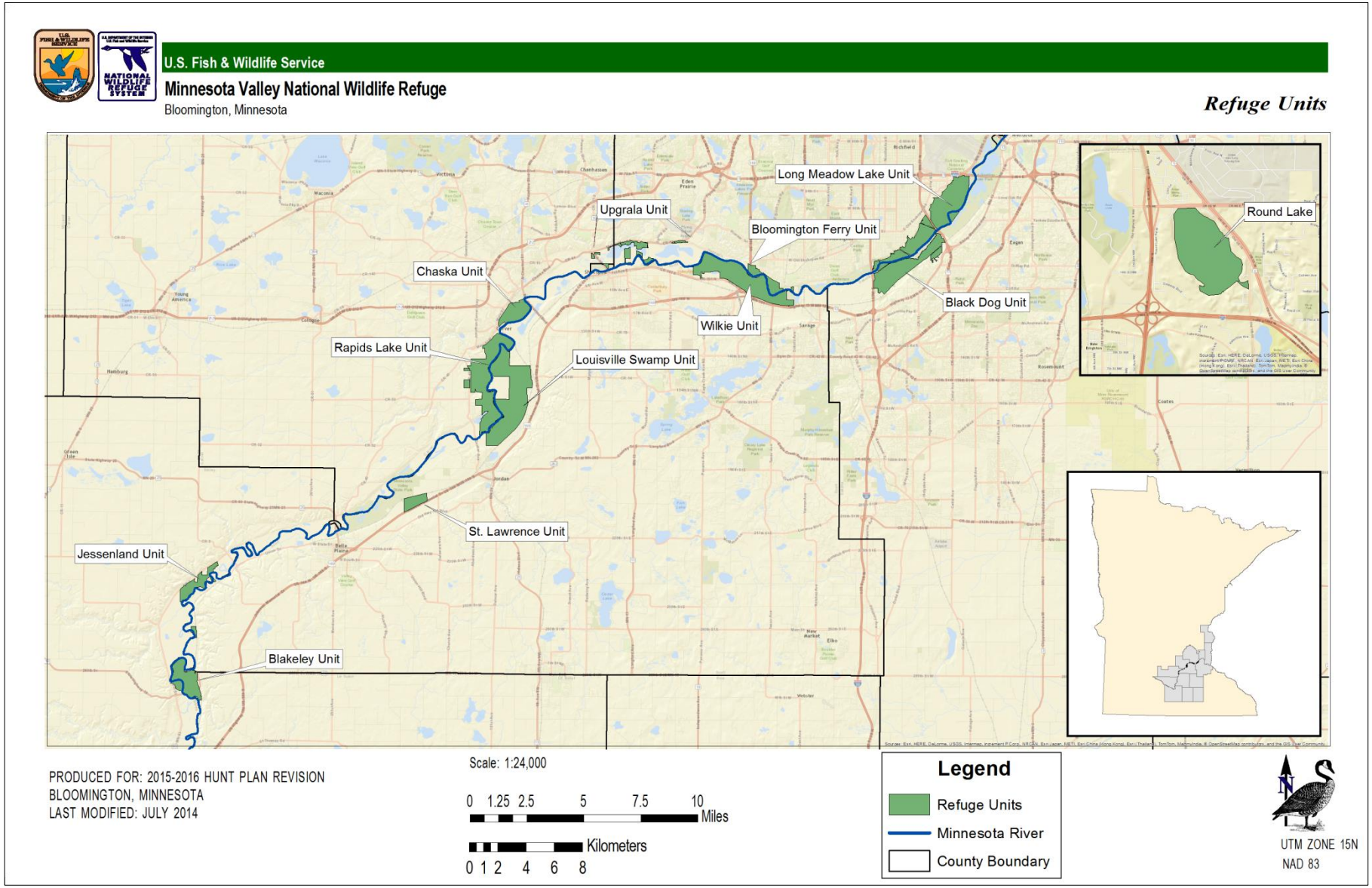

Figure 1: Minnesota Valley National Wildlife Refuge Units

3.0 SCOPING AND PUBLIC PARTICIPATION

Previous to this 2015-2016 Hunt Plan, the Refuge's hunting program has been developed in coordination with Minnesota Department of Natural Resources (MNDNR) regional and area managers, as well as with other metropolitan area public land managers. The general public also was included in some activities. Scoping and public participation included formal and informal meetings as well as through the Refuge soliciting comments on written hunting plans and supporting documents.

The Refuge's consultation with MNDNR and other land managers for the development of this 2015-2016 Hunt Plan dates back to 1999 when the Refuge began a series of meetings to develop a vision for Refuge programs via the Comprehensive Conservation Plan (CCP) (USFWS 2004) process. Since then, the Refuge has continued informally consulting and coordinating with the State regarding Refuge hunting activities until a more formal effort was renewed in 2009 and 2010. A detailed description of the Refuge's scoping efforts with agencies and the public is provided in Appendix C.

Topics of most concern to consulting agencies and the public that came out of scoping and coordination activities were as follows:

- A proposal to open new target species (American crow, eastern red squirrel, coyote, red fox, gray fox, raccoon, opossum, and striped skunk) to general public hunting on the Refuge has been included in the 2015-2016 Hunt Plan, in order to increase hunting opportunities for the public.
- Certain Refuge Units will be open to Population Management hunts by the general public who possess a Refuge Special Use Permit (SUP). Specific Units will only be open to hunting with a Refuge SUP (Figure 2). Population Management hunts are for the purpose of reducing the numbers of over abundant or nuisance species (e.g., white-tailed deer). Because of the intense development surrounding these units, a SUP is needed to minimize public concerns. Anyone in the general public may apply to participate in a Population Management hunt, but applicants must pass a proficiency test and have taken a bowhunter certification class in order to participant in the hunt. The Refuge SUP will be in addition to the appropriate state and local hunting licenses and permits.

The Refuge solicited public comments on the Draft 2015 Hunt Plan and EA. The drafts were made available for a 30 day review and comment period which extended from July 22, 2014, through August 21, 2014. The availability of these documents was announced via a public notice to ten print media organizations whose coverage extends beyond the geographic limits of the Refuge. The notice also was sent directly to legislators, municipal officials, agency contacts, and non-governmental organizations (see Section 8.0). The availability of the draft Hunting Plan and EA were announced on the Service's Refuge, Regional, and National websites. During the comment period, the Refuge hosted two "listening station" events at the Bloomington Education and Visitors Center on August 5, 2014 and Rapids Lake Education and Visitors Center on August 7, 2014. At both events, the Refuge staffs were available to discuss the proposed Hunt Plan and EA with any interested persons.

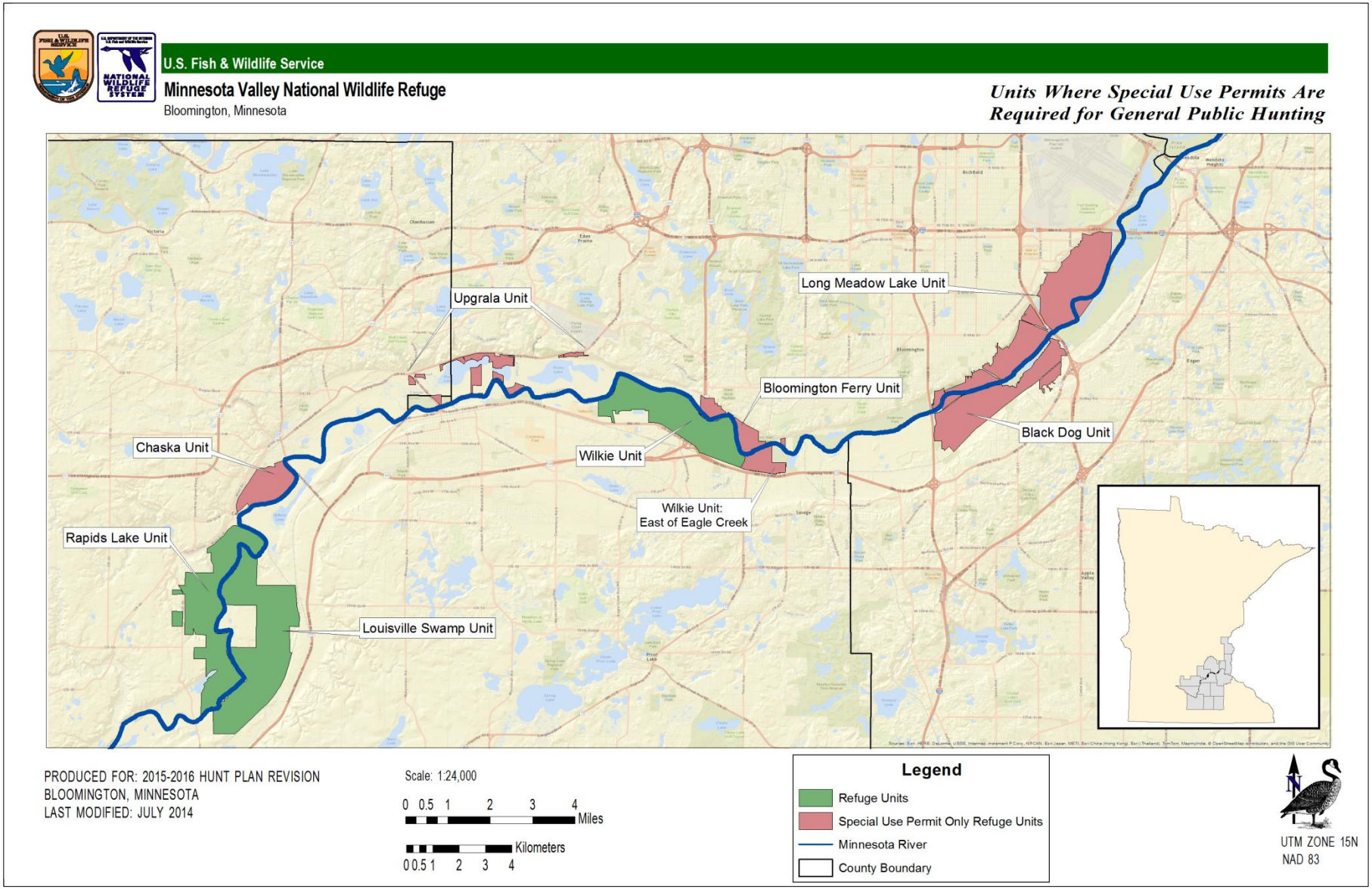

Figure 2: Refuge Units where a Special Use Permit is required to participate in general public hunts.

Following the Regional Director's review of the Hunt Plan, this EA, and approval of the Finding of No Significant Impact, and other supporting documentation for opening hunting on the Refuge as described as the preferred alternative here, the Service will publish in the Federal Register a Proposed Rule that updates the hunting program on the Refuge. After the comment period closes for the Proposed Rule, a determination will be made whether to implement Refuge hunting as outlined in this Hunt Plan. Subsequently, a Final Rule will be published outlining hunting on the Refuge. The Refuge is officially open for the hunting opportunities described here only after the effective date of the final rule. Following these approvals, the Refuge Manager will annually review refuge-specific hunting regulations and the Hunt Plan to ensure continued compatibility and consistency of the visitor services program with existing laws and regulations.

4.0 PROPOSED ACTION AND THE ALTERNATIVES

One of the main purposes of the Refuge is to provide wildlife-dependent recreation and environmental education *(Public Law 94-466; October 8, 1976)*. Hunting is a valuable means to meet this purpose. Toward that end, the Refuge has drafted an updated Hunt Plan of its Visitor Services Plan. The 2015-2016 Hunt Plan seeks to open additional Service lands to general public hunting with a Refuge Special Use Permit and open new target species to public hunting. Proposed uses within this Plan are appropriate and compatible with the mission and goals of the Refuge System and the purposes for which the Refuge was established (USFWS 2012).

The Service evaluated possible hunting program changes through three alternatives: (1) No Hunting, (2) Maintain Current Hunting Programs on Refuge Lands Previously Opened to Hunting, (3) Change Hunting Programs on Refuge Lands Previously Opened to Hunting.

4.1 Alternatives Considered But Not Developed

A potential alternative was considered but not carried forward for detailed analysis because it would not enable the Refuge to fulfill the purposes for which it was established.

4.1.1 No Hunting

A No Hunting alternative would require existing hunting activities to cease on the Refuge. Most lands presently managed as part of the Refuge were hunted upon prior to being included in the Refuge. With few exceptions those lands continued to be hunted upon after becoming part of the Refuge.

Numerous comments supporting the continuation of hunting were received during the scoping for the original EA supporting the establishment of the Refuge and the EIS (USFWS 1982) which was completed immediately after establishing legislation was passed in 1976 and which evaluated the proposed master plan for Refuge development. The Refuge hunting program has been reviewed several times since 1982 and there has been no public support for alternatives that eliminate hunting on Refuge lands.

The Improvement Act identifies hunting as one of six priority uses of lands within the Refuge System. To eliminate hunting on Refuge lands where it already has been determined to be compatible with Refuge purposes and the mission of the System would not meet the intent of the Improvement Act. The selected alternative in the Refuge's 2004 CCP (USFWS 2004) identified

a hunting program that was expanded yet compatible and balanced with other priority Refuge uses.

4.2 Alternatives Developed For Detailed Analysis

Two alternatives, maintain current hunting programs on refuge lands previously opened to hunting and change hunting programs on refuge lands previously opened to hunting, were carried forward for detailed analysis.

4.2.1 Elements Common to Developed Alternatives

Under both alternatives, hunting on the Refuge will be consistent with State regulations such as: (1) hunting hours, (2) license requirements, (3) possession rules and bag limits, (4) hunting firearms and bow requirements, and (5) blaze orange requirements. Both alternatives also follow State hunting seasons with a few exceptions. The Refuge uses February 28th as a cut-off date for the majority of hunting activities to ensure that bird migration and breeding is not disrupted.

Regulations pertaining to hunting on all National Wildlife Refuge System Lands would remain in effect with both alternatives. These regulations are identified in Title 50 of the Code of Federal Regulations (Sections 20.21 and 32.2) and in the Refuge Hunt Plan associated with this document. Topics covered by these regulations include baiting, possession of alcohol, and use of nontoxic shot for migratory birds.

Most Refuge-specific regulations also would apply to both alternatives. These regulations are identified in Title 50 of the Code of Federal Regulations Section 32.42 and in the Refuge Hunting Chapter associated with this document. Refuge-specific regulations include hunting access hours, use of stands and boats, use of hunting dogs, and types of weapons and ammunition allowed for hunting. The Refuge currently requires non-toxic ammunition for turkey and migratory bird hunting but we encourage hunters to voluntarily use non-toxic projectiles for all types of hunting. The only Refuge-specific regulations that one alternative would defer on are the regulations pertaining to what species are open to hunting on the Refuge.

With both alternatives, the Refuge is open to hunting for migratory birds (geese, ducks, merganser, coot, moorhen, rails, woodcock, common snipe, and mourning dove), upland game (ruffed grouse, ring-necked pheasant, gray partridge, gray squirrel, fox squirrel, snowshoe hare, cottontail rabbit, jackrabbit, and wild turkey), and big game (white-tailed deer). The Refuge is closed to hunting for species not listed as open even if those species have a season within state regulations. Species not open to hunting on the Refuge include swans, sandhill cranes, badgers, ground squirrels, and all other species not listed as open, including both protected and unprotected species as defined by the State of Minnesota.

Under both alternatives, parts of certain Refuge Units may be open to Refuge-specific special hunts. A Refuge-specific special hunt is an activity focused on certain populations of hunters to provide them with additional opportunities or methods of hunting through a Refuge approved program. The populations targeted for these hunts are youth hunters, hunters with disabilities, or other underserved hunter populations. Refuge-specific special hunts may be allowed for migratory birds, upland game, or big game and always will require Refuge-specific authorization. They are conducted within the framework of the State seasons and regulations for

the species proposed to be hunted. Refuge-specific special hunts for people with disabilities and youth hunters will be administered on designated areas of the Refuge. Some of these designated areas would be closed to hunting by the general public during the time of the Refuge-specific special hunt. In administering special hunts, the Refuge Manager will consider the biological effects of proposed hunting activities as well as the hunts potential to conflict with concurrent non-hunting recreational activities.

4.2.2 Alternative A: Maintain Current Hunting Programs on Refuge Lands Previously Opened to Hunting (No Action)

Most units of the Refuge support populations of migratory birds, big game, and upland game. All units of the Refuge are open to the public for some type of recreational use; portions of 11 of the 12 Refuge Units have been previously opened to some type of hunting. Portions of some Units have areas that are closed to hunting to accommodate other recreational, biological, or administrative uses.

The current hunting program allows specific hunting activities on designated units or portions of units. This enables the Refuge to balance species needs and other recreational uses with hunting activities. Hunting is not allowed on the Round Lake Unit. The Long Meadow Lake, Black Dog, Bloomington Ferry, Upgrala, and Chaska Units are closed to general public hunting but are sometimes used for Refuge-specific special hunts by groups such as youth hunters and hunters with disabilities. Portions of the Wilkie, Louisville Swamp, and Rapids Lake, St. Lawrence, Jessenland, and Blakeley Units of the Refuge are open to hunting by the general public.

Hunting activities currently allowed on specific Refuge Units are as follows:

Round Lake Unit
Closed to all hunting including Refuge-specific special hunts.

Long Meadow Lake Unit
Open only to Refuge-specific special hunts for migratory birds, upland game, and big game.

Black Dog Unit
Open only to Refuge-specific special hunts for migratory birds, upland game, and big game.

Bloomington Ferry Unit
Open only to Refuge-specific special hunts for migratory birds, upland game, and big game.

Wilkie Unit
Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

<u>East of Eagle Creek (i.e., Continental Grain Marsh)</u>

- Open only to Refuge-specific special hunts.

<u>West of Eagle Creek to Highway 169 (i.e., Rice Lake)</u>

- Migratory Birds
    - Open only to hunting goose, duck, merganser, moorhen, coot, and rails.

    - Closed to hunting mourning dove, snipe, and woodcock.
- Upland Game
    - Closed to firearms hunting.
- Big Game
    - Closed to firearms hunting.

West of Highway 169 (including Fisher and Blue Lakes)
- Migratory Birds
    - Open only to Refuge-specific hunts.
- Upland Game
    - Closed to firearms hunting.
- Big Game
    - Closed to firearms hunting.

Upgrala Unit
Open only to Refuge-specific special hunts for migratory birds, upland game, and big game.

Chaska Unit
Open only to Refuge-specific special hunts for migratory birds, upland game, and big game.

Louisville Swamp Unit
Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

North of Middle Road
- Migratory Birds
    - Open only to Refuge-specific hunts.
- Upland Game
    - Closed to firearms hunting.
- Big Game
    - Closed to firearms hunting.

South of Middle Road
- Migratory Birds
    - Open to hunting according to State regulations.
- Upland Game
    - Open to hunting according to State regulations.
- Big Game
    - Open to hunting according to State regulations.

Rapids Lake Unit
Open to Refuge-specific special hunts for migratory birds, upland game, and big game.
- Migratory Birds
    - Open to hunting according to State regulations.
- Upland Game
    - Open to hunting according to State regulations.
- Big Game

- Open to hunting according to State regulations.

St. Lawrence Unit
Open to Refuge-specific special hunts for migratory birds, upland game, and big game.
- Migratory Birds
  - Open to hunting according to State regulations.
- Upland Game
  - Open to hunting according to State regulations.
- Big Game
  - Closed to firearms hunting.

Jessenland Unit
Open to Refuge-specific special hunts for migratory birds, upland game, and big game.
- Migratory Birds
  - Open to hunting according to State regulations.
- Upland Game
  - Open to hunting according to State regulations.
- Big Game
  - Open to hunting according to State regulations.

Blakeley Unit
Open to Refuge-specific special hunts for migratory birds, upland game, and big game.
- Migratory Birds
  - Open to hunting according to State regulations.
- Upland Game
  - Open to hunting according to State regulations.
- Big Game
  - Open to hunting according to State regulations.

4.2.3 Alternative B: Change Hunting Programs on Refuge Lands Previously Opened to Hunting (Preferred Alternative)

In this Alternative the Service is proposing to change current hunting programs on Refuge lands previously opened to hunting by the addition of new target species to the Refuge's list of huntable species (Table 4.2.3.1). The Refuge hunting seasons for some of the proposed target species differ from the State hunting seasons due to possible conflict with bird migration and breeding (Table 4.2.3.2). The Refuge uses February 28th as a cut-off for the majority of hunting activities.

Table 4.2.3.1: Additional species proposed to be open to hunting on the Refuge in 2015 and beyond.

Migratory Game Birds	Upland Game	Big Game	Furbearer
	American crow		Coyote
	Eastern red squirrel		Fox (red and gray)
			Raccoon
			Opossum
			Striped skunk

Table 4.2.3.2:Refuge hunting seasons that differ from State seasons.

Species	Refuge Season
American crow	August 1st thru September 20th
Coyote	December 1st thru February 28th
Fox (red and gray)	December 1st thru February 28th
Raccoon	October 22nd thru February 28th
Opossum	October 22nd thru February 28th
Striped skunk	October 22nd thru February 28th

For furbearer hunting, Refuge regulations are the same that apply to upland game species. Jessenland and Blakeley Units allow.17 cal. rimfire and .22 cal. rimfire single projectile ammunition for hunting furbearers. The Units where single projectile ammunition for furbearer hunting is prohibited are Round Lake, Long Meadow Lake, Black Dog, Bloomington Ferry, Wilkie, Upgrala, Chaska, Louisville Swamp, Rapids Lake, and St. Lawrence. Furbearer hunting hours are restricted to daytime hours, the same as upland game hunting. No hunting dogs are allowed for furbearer hunting.

In addition, the Service proposes to open additional Refuge Units to general public hunting for Population Management hunts with a Special Use Permit (Figure 2). Population Management hunts are for the purpose of reducing the numbers of over abundant or nuisance species (e.g., white-tailed deer). Because of the intense development surrounding these units, a Special Use Permit is needed to minimize public concerns. Anyone in the general public may apply to participate in a Population Management hunt, but applicants must pass a proficiency test and have taken a bowhunter certification class in order to participant in the hunt. The Refuge will be working in collaboration with other organizations to assist in administering proficiency tests in order to have qualified, competent, and responsible participates for these Population Management hunts. The Refuge will also be able to specify the number of hunters allowed on each Refuge Unit and when the hunters are allowed. These hunts are to occur on specific portions of specific Refuge Units. Population Management hunts are not expected to occur on every Refuge Units each year and the frequency of the hunts will fluctuate year to year based on the most current species population data. Frequency of hunts on a Refuge Unit will decrease over time as population densities of target species are closer to goal levels.

Population Management hunts are short duration in nature, generally lasting 2 to 10 days. Typically they are sited on Units surrounded by intense development where hunting normally is not allowed. Because of the intense development surrounding these units, only archery hunting by skilled members of the general public is allowed. Such hunts have been successfully

implemented in the Minneapolis-St. Paul metropolitan area for more than 20 years by several units of local government (MBRB 2014). We anticipate these population management hunts will be conducted primarily on the on the Long Meadow Lake, Black Dog, Bloomington Ferry, Upgrala, and Chaska Units (Figure 2). These Units historically serve as sanctuaries for white-tailed deer with resulting damage to habitat on and off-Refuge and an increased incidence of deer-car collisions on surrounding streets and highways.

The level of proficiency test required to hunt in these Units are set on a case by case basis. Restrictions are based upon considerations of a specific unit's or area's characteristics (e.g., size, shape,) potential for conflict with other on-unit or off-unit uses or activities, local ordinances, and safety. For all locations in these Units, hunters have to pass at minimum the "standard" proficiency test. It consists of being able to shoot 5 of 5 arrows in a 7" circle at 20 yards. . Most areas will likely require prospective hunters to pass a "sharpshooter" proficiency test that requires being able to shoot 5 of 5 arrows in a 4" circle at 20 yards. In select situations, a prospective bowhunter may be required to demonstrate proficiency under simulated field conditions (e.g., full hunting gear, elevated stand).

Hunting activities proposed to be allowed on specific Refuge units follow. Maps identifying pertinent landmarks and Refuge unit hunting areas are provided in Appendix B, as noted.

Round Lake Unit
Closed to all hunting including Refuge-specific special hunts.

Long Meadow Lake Unit (see map, Appendix A)
Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Big Game
    - Open to Population Management hunting with a Special Use Permit.
    - Population Management hunts are closed to firearms hunting.

Black Dog Unit
Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Big Game
    - Open to Population Management hunting with a Special Use Permit.
    - Population Management hunts are closed to firearms hunting.

Bloomington Ferry Unit (see map, Appendix A)
Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Big Game
    - Open to Population Management hunting with a Special Use Permit.
    - Population Management hunts are closed to firearms hunting.

Wilkie Unit (see map, Appendix A)
Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Big Game
    - Open to Population Management hunting with a Special Use Permit.
    - Population Management hunts are closed to firearms hunting.

East of Eagle Creek (i.e., Continental Grain Marsh)
Open to Refuge-specific special hunts

West of Eagle Creek to Highway 169 (i.e., Rice Lake)

- Migratory Birds
  - Open only to hunting goose, duck, merganser, moorhen, coot, and rails.
  - Closed to hunting mourning dove, snipe, and woodcock.
  - Closed to State spring season light goose hunting.
- Upland Game
  - Closed to firearms hunting.
  - Closed to hunting crow.
- Big Game
  - Closed to firearms hunting.
- Furbearers
  - Closed to firearms hunting

West of Highway 169 (including Fisher and Blue Lakes)

- Migratory Birds
  - Open only to Refuge-specific hunts.
- Upland Game
  - Closed to firearms hunting.
  - Closed to hunting crow.
  - Closed to State spring season light goose hunting.
- Big Game
  - Closed to firearms hunting.
- Furbearers
  - Closed to firearms hunting

Upgrala Unit (see map, Appendix A)
Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Big Game
  - Open to Population Management hunting with a Special Use Permit.
  - Population Management hunts are closed to firearms hunting.

Chaska Unit (see map, Appendix A)
Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Big Game
  - Open to Population Management hunting with a Special Use Permit.
  - Population Management hunts are closed to firearms hunting.

Louisville Swamp Unit (see map, Appendix A)
Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Big Game
  - Open to Population Management hunting with a Special Use Permit.
  - Population Management hunts are closed to firearms hunting.

North of Middle Road

- Migratory Birds
  - Open only to Refuge-specific hunts.
- Upland Game
  - Closed to firearms hunting.
  - Closed to hunting crow.
- Big Game
  - Closed to firearms hunting.

South of Middle Road

- Migratory Birds
  - Open to hunting according to State regulations.
- Upland Game
  - Open to hunting according to State regulations.
  - Closed to hunting crow.
- Big Game
  - Open to hunting according to State regulations.
- Furbearers
  - Closed to firearms hunting

Rapids Lake Unit (see map, Appendix A)
Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Migratory Birds
  - Open to hunting according to State regulations.
- Upland Game
  - Open to hunting according to State regulations.
  - Closed to hunting crow.
- Big Game
  - Open to Population Management hunting with a Special Use Permit.
  - Population Management hunts are closed to firearms hunting.
  - Open to hunting according to State regulations.
- Furbearers
  - Closed to firearms hunting

St. Lawrence Unit (see map, Appendix A)
Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Migratory Birds
  - Open to hunting according to State regulations.
- Upland Game
  - Open to hunting according to State regulations.
  - Closed to hunting crow.
- Big Game
  - Open to Population Management hunting with a Special Use Permit.
  - Closed to firearms hunting.
- Furbearers
  - Closed to firearms hunting

Jessenland Unit (see map, Appendix A)
Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Migratory Birds
  - Open to hunting according to State regulations.
- Upland Game
  - Open to hunting according to State regulations.
- Big Game
  - Open to Population Management hunting with a Special Use Permit.
  - Population Management hunts are closed to firearms hunting.
  - Open to hunting according to State regulations.
- Furbearers
  - Open to hunting according to Refuge-specific regulations.

Blakeley Unit (see map, Appendix A)
Open to Refuge-specific special hunts for migratory birds, upland game, and big game.

- Migratory Birds
  - Open to hunting according to State regulations.
- Upland Game
  - Open to hunting according to State regulations.
- Big Game
  - Open to Population Management hunting with a Special Use Permit.
  - Population Management hunts are closed to firearms hunting.
  - Open to hunting according to State regulations.
- Furbearers
  - Open to hunting according to Refuge-specific regulations.

4.2.4 Comparison of Developed Alternatives

Table 4.2.4.1 presents a general comparison of the Alternatives. Table 4.2.4.2 presents a unit by unit comparison of hunting activities allowed for the Alternatives.

5.0 AFFECTED ENVIRONMENT

The Service administers the Refuge as a unit of the National Wildlife Refuge System. The Refuge was established in 1976 by Congress through the Minnesota Valley National Wildlife Refuge Act to (1) provide habitat for a large number of migratory waterfowl, fish, and other wildlife species; (2) provide environmental education, wildlife recreational opportunities, and interpretive programs for Twin Cities residents; (3) protect important natural resource areas from degradation; and (4) protect the valley's unique social, educational, and environmental assets.

The Refuge is one of more than 550 refuges in the National Wildlife Refuge System (System). The mission of the System is "to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish and wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans" (USFWS 1997). National Wildlife Refuges provide important habitat for native plants and many mammals, birds, fish, insects, amphibians, and reptiles. Refuges offer a wide variety of wildlife-dependent recreational opportunities and many have visitor centers,

wildlife trails, and environmental education programs. Nationwide, about 40 million visitors annually hunt, fish, observe and photograph wildlife, or participate in educational and interpretive activities on refuges. The System is the most comprehensive system in the world of lands and waters managed specifically for the protection of wildlife and wildlife habitat.

The authorized boundary of the Refuge encompasses 24,210 acres. Nearly 14,235 acres presently are owned or managed as part of the Refuge. Some areas are not owned by the Service but are administered through management agreements. Presently, the Refuge consists of 12 Units; 11 of these Units are along a 70 mile stretch of the Minnesota River located between historic Fort Snelling and the City of Henderson. The Refuge's Land Protection Plan (USFWS 2004) identifies goals for additional lands to be purchased or administered as part of the Refuge within this area. The Round Lake Unit, a 152-acre lake basin tract with an area of permanent wetland located in the City of Arden Hills, is administered as a disjunctive part of the Refuge.

Refuge lands are interspersed among lands owned by state agencies, local governments, and private corporations and citizens. The Refuge strives to enter management agreements with neighboring landowners to ensure that adjacent lands are managed in a way that complements the Refuge's activities.

Table 4.2.4.1 – General Comparison of Alternatives.

Action	Alternative A (No action)	Alternative B (Preferred)
Species to be hunted	Migratory Birds: goose, duck, merganser, coot, moorhen, rails, woodcock, common snipe, mourning dove Upland Game: ruffed grouse, gray partridge, ring-necked pheasant, gray squirrel, fox squirrel, cottontail rabbit, snowshoe hare, jackrabbit, wild turkey Big Game: white-tailed deer Furbearers: None	No change Addition of American crow and eastern red squirrel No change Furbearers: coyote, red fox. Gray fox, raccoon, opossum, striped skunk
Locations of hunts	Units closed to all hunting: Round Lake Units open to Refuge-specific special hunts only: Long Meadow Lake, Black Dog, Bloomington Ferry, Wilkie- Continental Grain Marsh, Upgrala, Chaska. (5,494 ac.) Units open to general public hunts only: None. (0 ac.) Units open to Refuge-specific special and general public hunts: Parts of Wilkie, Louisville Swamp, Rapids Lake, St. Lawrence, Jessenland, Blakeley. (9,196 ac.)	No change Units open to Refuge-specific special hunts only: None (0 ac.) 100% decrease in acreage open to only to Refuge-specific special hunts No change Units open to Refuge-specific special, and general public hunts: Wilkie, Louisville Swamp, Rapids Lake, St. Lawrence, Jessenland, Blakeley, Long Meadow Lake, Black Dog, Bloomington Ferry, Upgrala, Chaska. (14,083 ac.) 65% increase in acreage open to both special and general public hunts
Huntable land base	14,083 ac. open to general public or Refuge-specific special hunts out of 14,235 ac. of Refuge lands Maintain huntable acres at pre-Service ownership levels. Hunting within 100 ft. of marked trails or parking lots prohibited.	No change No change No change
Conflict between hunting and non-hunting activities	Potential conflicts with biological, non-hunting public use, or administrative activities mitigated by spatial and temporal separation of activities.	No change

Table 4.2.4.2 - Unit by unit comparison of hunting activities allowed for Alternatives.

Unit	Alternative A (No action)	Alternative B (Preferred)
Round Lake Unit	• Closed to all hunting including Refuge-specific special hunts.	• No change
Long Meadow Lake Unit	• Open only to Refuge-specific special hunts for migratory birds, upland game, and big game. Refuge authorization required. • Closed to general public hunting.	• No change • Big Game o Open to Population Management hunting with a Special Use Permit. o Population Management hunts are closed to firearms hunting.
Blackdog Unit	• Open only to Refuge-specific special hunts for migratory birds, upland game, and big game. Refuge authorization required. • Closed to general public hunting.	• No change • Big Game o Open to Population Management hunting with a Special Use Permit. o Population Management hunts are closed to firearms hunting.
Bloomington Ferry Unit	• Open only to Refuge-specific special hunts for migratory birds, upland game, and big game. Refuge authorization required. • Closed to general public hunting.	• No change • Big Game o Open to Population Management hunting with a Special Use Permit. o Population Management hunts are closed to firearms hunting.
Wilkie Unit	<u>Entire Unit</u> • Open to Refuge-specific special hunts. Refuge authorization required. <u>East of Eagle Creek (i.e., Continental Grain Marsh)</u> • Open to only to Refuge-specific special hunts. Refuge authorization required. <u>West of Eagle Creek to Highway 169 (i.e., Rice Lake)</u> • Migratory Birds o Open to hunting goose, duck, merganser, moorhen, coot, and rails only o Closed to hunting mourning dove, snipe, and woodcock. • Upland Game o Closed to firearms hunting. • Big Game o Closed to firearms hunting. • Furbearers o Closed to hunting <u>West of Highway 169 Bridge (including Fisher and Blue Lakes)</u> • Migratory Birds o Open only to Refuge-specific special hunts. Refuge authorization required • Upland Game o Closed to firearms hunting. o Open to Refuge-specific special hunts. • Big Game o Closed to firearms hunting. • Furbearers o Closed to hunting	<u>Entire Unit</u> • No change • Big Game o Open to Population Management hunting with a Special Use Permit. o Population Management hunts are closed to firearms hunting. <u>East of Eagle Creek (i.e., Continental Grain Marsh)</u> • Open to Population Management hunting and Refuge-specific special permit with a Special Use Permit <u>West of Eagle Creek to Highway 169 (i.e., Rice Lake)</u> • Migratory Birds o No change o No change • Upland Game o No change • Big Game o No change • Furbearers o Closed to firearms hunting. <u>West of Highway 169 Bridge (including Fisher and Blue Lakes)</u> • Migratory Birds o No change • Upland Game o No change o No change • Big Game o No change • Furbearers o Closed to firearms hunting.

Table 4.2.4.2 - Unit by unit comparison of hunting activities allowed for Alternatives (Continued).

Unit	Alternative A (No action)	Alternative B (Preferred)
Upgrala Unit	• Open only to Refuge-specific special hunts for migratory birds, upland game, and big game. Refuge authorization required. • Closed to general public hunting.	• No change • Big Game o Open to Population Management hunting with a Special Use Permit o Population Management hunts are closed to firearms hunting.
Chaska Unit	• Open only to Refuge-specific special hunts for migratory birds, upland game, and big game. Refuge authorization required. • Closed to general public hunting.	• No change • Big Game o Open to Population Management hunting with a Special Use Permit o Population Management hunts are closed to firearms hunting.
Louisville Swamp Unit	<u>Entire Unit</u> Open to Refuge-specific special hunts for migratory birds, upland game, and big game. <u>North of Middle Road</u> • Migratory Birds o Only open to Refuge-specific special hunts. • Upland Game o Closed to firearms hunting. o Open to Refuge-specific special hunts. • Big Game o Closed to firearms hunting. • Furbearers o Closed to hunting. <u>South of Middle Road</u> • Migratory Birds o Open to hunting according to State regulations. • Upland Game o Open to hunting according to State regulations. • Big Game o Open to hunting according to State regulations. • Furbearers o Closed to hunting.	<u>Entire Unit</u> Open to Refuge-specific special hunts for migratory birds, upland game, and big game. • Big Game o Open to Population Management hunting with a Special Use Permit. o Population Management hunts are closed to firearms hunting. <u>North of Middle Road</u> • Migratory Birds o No change • Upland Game o No change o No change • Big Game o No change • Furbearers o No change <u>South of Middle Road</u> • Migratory Birds o No change • Upland Game o No change • Big Game o No change • Furbearers o Open to hunting according to Refuge-specific regulations.
Rapids Lake Unit	Open to Refuge-specific special hunts for migratory birds, upland game, and big game. Refuge authorization required. • Migratory Birds o Open to hunting according to State regulations. • Upland Game o Open to hunting according to State regulations.	No change • Migratory Birds o No change • Upland Game o No change

Table 4.2.4.2 - Unit by unit comparison of hunting activities allowed for Alternatives (Continued).

Unit	Alternative A (No action)	Alternative B (Preferred)

Rapids Lake Unit (Continued)	• Big Game
	  ○ Open to hunting according to State regulations.
	• Furbearers
	  ○ Closed to hunting
		• Big Game
		  ○ No change
		  ○ Open to Population Management hunting with a Special Use Permit
		  ○ Population Management hunts are closed to firearms hunting.
		• Furbearers
		  ○ Open to hunting according to Refuge-specific regulations.

St. Lawrence Unit	Open to Refuge-specific special hunts for migratory birds, upland game, and big game. Refuge authorization required.
	• Migratory Birds
	  ○ Open to hunting according to State regulations.
	• Upland Game
	  ○ Open to hunting according to State regulations.
	• Big Game
	  ○ Closed to firearms hunting.
	• Furbearers
	  ○ Closed to hunting
		No change
		• Migratory Birds
		  ○ No change
		• Upland Game
		  ○ No change
		• Big Game
		  ○ No change
		  ○ Open to Population Management hunting with a Special Use Permit
		  ○ Population Management hunts are closed to firearms hunting.
		• Furbearers
		  ○ Open to hunting according to Refuge-specific regulations.

Jessenland Unit	• Open to Refuge-specific special hunts for migratory birds, upland game, and big game. Refuge authorization required.
	• Migratory Birds
	  ○ Open to hunting according to State regulations.
	• Upland Game
	  ○ Open to hunting according to State regulations.
	• Big Game
	  ○ Open to hunting according to State regulations.
	• Furbearers
	  ○ Closed to hunting
		• No change
		• Migratory Birds
		  ○ No change.
		• Upland Game
		  ○ No change.
		• Big Game
		  ○ No change.
		  ○ Open to Population Management hunting with a Special Use Permit
		  ○ Population Management hunts are closed to firearms hunting.
		• Furbearers
		  ○ Open to hunting according to Refuge-specific regulations.

Blakeley Unit	• Open to Refuge-specific special hunts for migratory birds, upland game, and big game. Refuge authorization required.
	• Migratory Birds
	  ○ Open to hunting according to State regulations.
	• Upland Game
	  ○ Open to hunting according to State regulations.
	• Big Game
	  ○ Open to hunting according to State regulations.
	• Furbearers
	  ○ Closed to hunting
		• No change
		• Migratory Birds
		  ○ No change.
		• Upland Game
		  ○ No change.
		• Big Game
		  ○ No change.
		  ○ Open to Population Management hunting with a Special Use Permit
		  ○ Population Management hunts are closed to firearms hunting.
		• Furbearers
		  ○ Open to hunting according to Refuge-specific regulations.

During the early 1990's, the focus of habitat management on the Refuge changed dramatically from optimizing habitat edges aimed at a narrow group of game species to ecosystem management using native species and natural processes. This approach is based on restoring and maintaining naturally occurring, pre-European settlement native plant communities to the extent possible. Presently, animal populations and habitats are not being manipulated to maximize any particular species or group of species, but are allowed to vary over time within the capacity of the biotic and abiotic resources.

A detailed historical background and description of natural and cultural resources on the Refuge can be found in the CCP and Environmental Assessment for the Minnesota Valley National Wildlife Refuge and Wetland Management District (USFWS 2004). A summary of those resources follows.

5.1 Landscape Setting

The landscape encompassing the Refuge was formed 11,000 years ago. During the Pleistocene Epoch, an inland sea named Glacial Lake Agassiz formed from the meltwaters of the retreating eastern edge of the Des Moines Lobe of the Laurentide Ice Sheet. Lake Agassiz was 700 feet deep and covered over 100,000 square miles in Minnesota, North Dakota, and Manitoba. Torrential meltwater drainage from Lake Agassiz created the River Warren, which varied from one to seven miles wide and from 75 to 200 feet deep. In most of the lower river valley, the river carved out a very wide and deep channel. As the Ice Age diminished, the northern outlet to Hudson Bay developed and the levels of both Lake Agassiz and River Warren receded. The resulting underfit stream meandered through an extremely wide floodplain bordered by broad terraces of rock sand, and gravel. The higher terraces were rounded-off and dissected by erosion. These terraces form the bluffs of what is now the Minnesota River Valley. Today, the Minnesota River Valley is a corridor of floodplain, forest, and wetlands that extend across some of Minnesota's most productive and intensively cultivated agricultural lands. The Valley is classified as a northern floodplain forest ecosystem that extends through the Big Woods, Mississippi Sand Plains, and the Southern Oak Barrens landscape regions of the State.

Over 90 percent of the current Refuge lands are located within the urban and suburban areas of the seven county Minneapolis-St. Paul (Twin Cities) Metropolitan Area. The Metropolitan Area had a population of nearly three million people in 2010 and is the country's 16th-largest metropolitan area. The Refuge is a green belt of marsh and woodland areas bordered by office buildings, highways, residential areas, and grain terminals. The Metropolitan Council, which has jurisdiction over the seven county Metropolitan Area, developed land use data for this area that encompasses most of the Refuge. Table 5.1 identifies the proportion of lands within the 1.9 million acre Metropolitan Area that fall within different land use categories (Metropolitan Council 2011).

The Refuge is comprised of 12 units currently totaling about 14,235 acres, spanning 70 miles of the Minnesota River. Of the Refuge's 14,235 acres, about 14,000 lie within the seven county Twin Cities Metropolitan Area. These Refuge lands comprise less than 1% of the Twin Cities Metropolitan Area. Two Refuge Units, Jessenland and Blakeley, lie outside the Twin Cities Metropolitan Area in an area dominated by agriculture and rural development.

Table 5.1. Proportion of Lands within the Twin Cities Metropolitan Area by Use Type (2010 Data).

Land Use	Percent	Acres
Residential	22	411,000
Commercial	2	37,000
Industrial	3	49,000
Institutional	2	36,000
Parks and Recreational	10	199,000
Major Roadways	2	30,000
Undeveloped	23	436,000
Agricultural	30	568,000
Open Water	6	125,000

5.2 Natural Resources

5.2.1 Habitats

The Refuge is located within the transition zone between the eastern broadleaf forest and the prairie parkland ecoregions as defined by Bailey (1983). Plant communities within this transition contain a mixture of hardwood forest, oak savanna, and mesic prairie. The many lakes, wetlands, streams, and springs of these ecoregions exhibit diverse emergent and submergent aquatic vegetation. The specific community types and their quality are dependent upon a number of factors including climate, soils, historical vegetation, previous disturbance, and habitat restoration and management activities.

The 11 river units of the Refuge lie along the lower portion of the Minnesota River between historic Fort Snelling and the City of Henderson. Approximately 90 percent of the Refuge is located within the 100-year floodplain. The surrounding bluffs have slopes of 12-25 percent and at their crest average 100 feet elevation above the river valley. A natural levee along the river channel in several portions of the Refuge has created many natural wetlands and shallow lakes in the floodplain. These wetlands are very productive and of considerable importance to waterfowl and waterbirds. A significant portion of these floodplain wetlands are recharged from emerging groundwater seeps and springs along the toe of the bluff. Small feeder creeks and streams are also common in the floodplain on or near several Refuge units. Consequently, the water quality of these wetlands is high where the natural flows and recharge areas have not been altered by development.

The Minnesota River is the largest tributary of the Upper Mississippi River. From its source near Big Stone Lake in western Minnesota, the Minnesota River flows southeast for 224 miles to Mankato, then northeast for 106 miles to its confluence with the Mississippi River at Fort Snelling, in the middle of the Minneapolis-St. Paul Metropolitan Area. The downstream boundary of the Refuge is about six river miles above the confluence. The river itself meanders very slowly through the valley and averages a grade of 0.8 foot per mile from Mankato to Carver. Its gradient is nearly level from Carver to its confluence with the Mississippi River. Along its course the surrounding land uses are typical of a rural to urban continuum.

Refuge units contain a variety of wetlands ranging from shallow wet meadows and calcareous fens to permanently flooded mixed emergent marshes. The river units are dominated by the latter where water is continuously present. Nearly all of these wetlands are spring fed and most of these large riverine basins are surrounded by mature cottonwood, willow, silver maple, and boxelder. Water control structures have been installed on several basins and water levels are managed to control rough fish and improve the productivity of the aquatic communities. Many of these wetlands provide good quality production, brood rearing, feeding, or migration habitats for a host of resident and migratory species. They also provide good quality spawning and nursery habitat for fish that inhabit the Minnesota River.

Floodplain forests historically dominated much of the floodplain along the Minnesota River and its tributaries. Today, this plant community remains on several of the Refuge river units. Typical tree species found in these seasonally flooded areas include silver maple, cottonwood, American elm, green ash, box elder, and occasionally, bur oak. The understory of these forests is generally open and in places the groundcover consists of wood nettle. In the past several years, former Refuge croplands that were historical floodplain forest have been replanted with species typical of this community with limited success.

Oak forests dominated by northern pin oaks and white oaks are the most common upland forest community on the Refuge. These stands occur on nutrient-poor hillsides and well-drained sandy soils along the Minnesota River Valley. They also contain overstory trees such as ash, elm, and maple. The shrub layer in these communities is frequently dense and commonly consists of American hazel, dogwood, and black raspberries. The control of European buckthorn, a prolific exotic in some of these plant communities, is a considerable challenge.

Oak savanna is critically imperiled throughout the Midwest. This plant community is characterized by scattered individuals and clumps of oaks growing with an understory dominated by prairie grasses and forbs. Many of today's oak forests were oak savanna prior to European settlement and the subsequent control of fires. Natural regeneration of this plant community without a natural fire regime is rare due to the inability of oak to reproduce under forest canopies. Many other historic savannas have been lost due to conversion to production agriculture or urbanization. Since 1994, several oak savanna restoration sites have been identified on the Refuge. Restoration has been initiated on these sites through a combination of mechanical treatment and prescribed burning. Initial results are encouraging as evidenced by the return of an understory of native grasses and forbs.

Remnant native prairie is some of the most diverse and important plant communities that exist in the Midwest. These rare and unique grasslands on Refuge units include wet, mesic and dry prairie and they are frequently interspersed with woodland areas, especially those forested sites protected from periodic fires. Mesic prairie is dominated by tall grasses including big bluestem and Indian grass. Medium-height grasses such as little bluestem and sideoats grama dominate dry prairies. Both mesic and dry prairies found on the Refuge contain shrubs such as leadplant and wild rose. Pasque flower and purple prairie clover are also commonly found in both plant communities.

Native grassland restoration has occurred on upland sites of Refuge units, easements, and associated private lands for many years. Former croplands are typically planted to native grass mixtures consisting of big bluestem, little bluestem, switch grass, sideoats grama, and Canada wildrye. A mixture of forbs is also planted to enhance the biological diversity of many of these sites.

Several small streams exist on the Refuge and some of these streams historically supported native brook trout. Some streams originate from springs within the bluff and bluff-floodplain transition zone of the Minnesota River. Several of the streams have a continual supply of cool, well-oxygenated ground water and support a variety of aquatic organisms. The streams also serve as a water source for many of the Refuge wetlands. The origins of the larger streams, such as Sand Creek, are in the watershed above the river valley, and are impacted by the dominance of agriculture throughout the watershed.

Horseshoe Lake on the Rapids Lake Unit is one of two deep water habitats on the Refuge. Historically, this lake was an oxbow of the Minnesota River, but it has since become disconnected from the main channel. The depth of this lake is unknown, as is the composition of its fishery. The Refuge shares ownership with private parties on Long Lake, the other deep water habitat on the Refuge, also on the Rapids Lake Unit. A 1998 fishery survey showed that 18 species of fish, and many large snapping turtles, occupied Long Lake. The most numerous species were black crappie, gizzard shad, black and brown bullhead, and carp. Aquatic exchange with these lakes and the Minnesota River does occur nearly every year during spring flooding. The open water pools serve as a loafing area for waterfowl, marsh birds, and occasional seasonal habitat for shorebirds. The trees surrounding the lakes provide good perch sites for a number of species including herons, bitterns, and raptors such as the Bald Eagle and Red-tailed Hawk.

5.2.2 Wildlife

More than 260 species of birds use the area during migration and 100-150 of these species nest in the Minnesota River Watershed. Bald Eagles use the area for nesting and feeding throughout the year. Every year, 30,000-40,000 waterfowl congregate in the lower portion of the Minnesota River Valley prior to fall migration. This avian diversity is complemented by approximately 50 species of mammals and 30 species of reptiles and amphibians. At least 10 game fish species are found in the river and tributaries including walleye, northern pike, largemouth bass, and channel catfish.

5.2.2.1 Migratory Birds

Migratory birds on the Refuge include both game and nongame species. The Minnesota River and adjacent bottomlands and uplands serve as a major migratory corridor for these birds as they travel between their breeding and wintering grounds.

Waterfowl

The annual Waterfowl Population Status Report (USFWS 2013b) includes data on the 2012 breeding population and production information available for waterfowl in North America and is a result of cooperative efforts by the Service, the Canadian Wildlife Service, various state and provincial conservation agencies, and private conservation organizations. These annual assessments are based on the distribution, abundance, and flight corridors of migratory birds. The

2013 report showed that in the traditional survey area, the total breeding duck population was 45.6 ± 0.7 (SE) million birds. This estimate is a 6% decrease from the 2012 population estimate (48.6 ± 0.8 (SE) million birds) and 33% above the long term average (USFWS 2013b).

Due to below average temperatures in April and May and above average precipitation levels in Minnesota during 2012, the number of permanent or semi-permanent wetlands increased 13% compared to 2012. The number of wetlands were close to the 10-year and long-term averages. The estimated Minnesota mallard breeding population was 293,300, which was similar to 2011 estimate of 225,000 mallards and the long-term average. The estimate of total duck abundance in Minnesota, including scaup, was 683,000, which was higher than last year's estimate (469,000) and the long-term average (USFWS 2013b).

According to the MNDNR (Dexter 2014) Canada goose (*Branta canadensis*) population estimates were 268,100 in Minnesota, a 34% decrease from 2012 (433,698). The Mid-continent Population (which includes Minnesota) for light geese, snow geese (*Chen caerulescens*) and Ross's geese (*Chen rossii*), was 4,614,000 light geese (USFWS 2013b). This was a 15% increase from 2012 and a record high for the third year in a row. The MNDNR recorded American coot (*Fulica americana*) populations as 40,500 for 2013, compared to the 2012 estimate of 26,000 (Dexter 2014).

Other Migratory Game Birds

The American woodcock (*Scolopax minor*) is a popular game bird throughout eastern North America. The management objective of the Service is to increase populations of woodcock to levels consistent with the demands of consumptive and non-consumptive users (USFWS 1990). In order to accomplish this, annual population estimates and harvest estimates are needed. The Singing-ground survey (SGS) was developed to provide indices to changes in abundance. The singing ground survey for 2013 indicated that indices for singing American woodcock males in the Central Management Region (which includes Minnesota) are not significantly different (statistically) from 2012 (Cooper & Rau 2013). The 10-year trend was not significantly different and the third straight year that the trend has remained stable (Cooper & Rau 2013).

The mourning dove (*Zenaida macroura*) is one of the most abundant species in urban and rural areas of North America, and is familiar to millions of people. Mourning doves are included in the treaties with Great Britain (for Canada) and Mexico (U.S. Department of Interior 1988). These treaties recognize sport hunting as a legitimate use of a renewable migratory bird resource. The annual dove harvest is estimated to be between 5% and 10% of the population (Otis et al. 2008). Population assessments such as counts of doves seen and heard are conducted to monitor mourning dove populations. The resulting information is used by wildlife administrators in setting annual hunting regulations (Seamans et al. 2011).). Data from the 2013 Call-Count Heard survey showed that no states experienced a significant increase or decline of dove abundance heard in the Central Management Unit (CMU), which includes Minnesota. According to Call-count heard, there has been a dove decline over the last 10 years and last 48 years (Seamans et al. 2013). In Minnesota the number of mourning doves observed in 2013 decreased by 20% from 2012. The dove abundance was 23 % below the 10-year average, and 35% below the long-term average (Dexter 2014). Mourning dove hunting was opened statewide in Minnesota in 2004.

The natural histories of rails, gallinules, and snipe make it difficult to estimate their populations. Breeding season data for rails and snipe, except Wilson's snipe, in Minnesota and the Mississippi Flyway indicate that long term populations are more or less stable (Sauer et al. 2014). Wilson's snipe (*Gallinago delicate*) has a statistically significant decline in its population's trend (Sauer et al. 2014).

Non-Game Migratory Birds
Marsh and waterbirds frequently observed in the valley and surrounding areas include Great Egrets, Double-crested Cormorants, Great Blue Herons, Green Herons, and Black-crowned Night-Herons. Exposed mudflats on Refuge riverbanks and wetlands attract shorebirds including Greater and Lesser Yellowlegs and Spotted Sandpipers.

Neo-tropical migrants attracted to forested habitats include thrushes, vireos and warblers. Several species of grassland birds, including bobolinks, field sparrows, song sparrows, and Eastern bluebirds also use the Refuge. Year-round residents include Downy, Hairy, Pileated and Red-bellied Woodpeckers. Birds of prey inhabiting Refuge lands include Red-tailed Hawks, American Kestrels, Sharp-shinned Hawks and Cooper's Hawks.

5.2.2.2 Upland Game

The harvest management of small upland game which includes huntable small mammals (squirrel, rabbit, and hare) and upland game birds (pheasant, grouse, gray partridge) is based on the understanding that small game species produce a large number of young each year, most of which are available for harvest because they would naturally not survive the winter and add to the next season's breeding population. Hunting these species is considered a form of compensatory mortality. It allows that a large portion of a species population could be harvested each fall because, if not taken by hunters, game species would likely die prior to the next breeding season from other causes. Compensatory mortality does not reduce subsequent spring breeding population size below what it would have been due to natural mortality. It follows that hunting mortality is compensated by a reduction in natural mortality. This concept of animal surplus relates especially well to r-selected species (i.e., small game animals having high potential for population increase with high annual mortality rates).

Data for small (upland) game is collected by MNDNR surveys. Annual population indices, 10-year averages, and historical information are used to determine statewide hunting seasons and bag limits for individual species. The 2013 August Roadside Survey found that population indices for the last few years are below the 10-year and long-term average (Dexter 2014). This trend was also similar in 2012. The MNDNR, however, has not proposed to modify hunting regulations for these species.

Wild turkey
Minnesota's wild turkey (*Meleagris gallopavo*) population has continued to expand since the first successful reintroduction in southeastern Minnesota in the 1960s. Turkey hunting is permitted in both the spring and fall; however hunting is closely regulated for continued population growth (Giudice et al. 2011). The 2006 statewide turkey population was estimated at 60,000 birds. The MNDNR's 2011 management goal is to establish and maintain the spring wild

turkey population at or above 75,000 in suitable habitats to maximize hunting and viewing opportunities. This plan outlined actions for habitat management, hunting season management, population management, and information and education to ensure a successful program (MNDNR 2006). The 2010 Fall Wild Turkey Survey collected data from 13 Turkey Permit Areas in the state. The results showed an increase in the turkey population. The comparison of the distribution of turkeys sighted by deer hunters during fall 2010 suggests that the population is expanding specifically in northern and western Minnesota (Giudice et al. 2011). Refuge staff are observing increasing numbers of turkey on Refuge units.

Ring-necked pheasant

The ring-necked pheasant (*Phasianus colchicus*) competes with the ruffed grouse as the most popular upland game bird in Minnesota. Native of Asia, pheasants were introduced to Minnesota after the native prairie grouse declined in the late 1800s. According to a MNDNR plan, developed in cooperation with Pheasants Forever and other organizations, Minnesota is capable of sustaining high densities of pheasants (MNDNR 2005). Using harvest as an indicator, Minnesota consistently ranks in the top 8 states that have huntable populations of wild ring-necked pheasants. Since 1987, statewide fall population estimates have varied from 1.0 to 2.3 million birds. The majority of the Refuge units open to pheasant hunting are in the MNDNR's Central Region. This region contains 5% of the state's grassland habitat with approximately 311,000 acres. The average number of pheasants observed (27.2/100 mi) in the 2013 survey fell 29% from 2012 and was 64% below the 10-year average (Dexter 2014). The decrease in the pheasant abundance can be partially attributed to both the colder than normal winter temperatures and snow cover persistence into late April and early May. The heavy rainfall in May could have also contributed to lower pheasant abundance by delaying nesting effort and reducing nest success in the early breeding season (Dexter 2014).

Other upland game

Data for other upland game bird and small mammal game species is collected by the MNDNR August roadside surveys (Dexter 2014). In 2011 the Hungarian partridge (*Perdix perdix*) index (1.1 /100 mi) was 77% lower than last year, 82% below the 10-year average. Hungarian partridge are more strongly affected by weather conditions during nesting and brood rearing than pheasants, so the cool, wet weather observed during the breeding season may have impacted the partridge population (Dexter 2014). Hungarian partridge are uncommon on Refuge lands because the Refuge is on the edge of their range in Minnesota

The ruffed grouse (*Bonasa umbellus*) is one of the most popular upland game birds in Minnesota along with the ring-necked pheasant. The number of drum heard per stop (dps) was used as the survey index value. The 2013 average ruffed grouse drums averaged 0.9 dps, which is a 10% decline from last year. This decline was expected based on the position of the population within the 10-year cycle and the 2009 peak (Dexter 2014). Few ruffed grouse are found on Refuge lands because the Refuge is on the edge of ruffed grouse range in Minnesota (MNDNR 2014a).

Eastern cottontail rabbit (*Sylvilagus floridanus*) index (4.6 /100 mi) was 17% higher than in 2012, and 22% below the 10-year average. White-tailed jackrabbit (*Lepus townsendii*) index (0.2 /100 mi) was similar to last year and the 10-year average (Dexter 2014). No snowshoe hares are reported in the vicinity of the Refuge. The MNDNR has no published estimates or trends for

fox, eastern red, and gray squirrels; however, Refuge staff has observed that they are abundant in suitable Refuge habitat.

5.2.2.3 Big Game

White-tailed deer (*Odocoileus virginianus*) represent one of the most important big game mammals in Minnesota. High deer population density can pose serious socio-economic and ecological challenges for wildlife managers, such as deer-vehicle collisions, crop depredation, and forest regeneration concerns (Dexter 2014). Based on annual harvest statistics and research, the MNDNR models deer population levels and develop harvest strategies, season frameworks, and season limits to meet target population goals by permit area. The MNDNR closely monitors the status of deer populations to determine appropriate harvest levels. The 2013 population index (20.7 /100 mi) of white-tailed deer for the entire state of Minnesota was 46% higher than last year, 23% below the 10-year average, and 116% above the long term average (Dexter 2014). The population rates continue to increase in the Southeast and Metro areas of the state, despite efforts to reduce populations (Dexter 2014). Metro Deer Management Area (601), which encompasses a large area of the Refuge, has no limit on antlerless deer. In 1989 federal, state, and local resource agencies formed a Minnesota Valley Deer Management Task Force to address deer overpopulation on their interspersed lands. The Task Force set a population goal for the deer herd in the Minnesota River valley at 15-25 deer per square mile (Minnesota Valley Deer Management Task Force 1990).

Aerial surveys estimated deer density on the Long Meadow Lake Unit to be about 43 deer per square mile on January 2013. The same survey also estimated the Bloomington Ferry Unit to have a deer density around 29 deer per square mile. Aerial surveys for deer population density are normally conducted in the winter when deer are concentrated and less canopy cover. Deer densities can naturally fluctuate within a year due to deer mobility and seasonal behavior changes, which mean single population density estimation is not always comprehensive of an area's true deer density value. White-tailed deer densities have fluctuated over the years, but in more urban units like the Long Meadow Lake and Bloomington Ferry Units, the densities generally have been above target densities (Table 2). Other Refuge units near heavily developed areas show similar trends in deer numbers. Deer have not been surveyed every year, sometimes due to survey conditions (e.g., lack of snow cover) or budget constraints (Minnesota Valley Deer Management Task Force, unpublished).

Table 5.2.2.3: Estimated white-tailed deer population density (deer per square mile) based off aerial surveys.

	2000	2003	2005	2006	2007	2011	2013
Long Meadow Lake Unit	39	20	31	66	40	37	43
Bloomington Ferry Unit	90	82	30	70	150	15	29

5.2.2.4 Furbearer

Monitoring the abundance of furbearers can be important for documenting the effects of harvest, habitat change, and environmental variability on these species' populations. Due to the nature of furbearers, estimating abundance over large areas using traditional methods such as distance sampling is often ineffective. MNDNR utilizes scent station survey routes to measure furbearer populations. The scent stations consist of sifted soil with a fatty-acid scent tablet placed in the

middle. Stations were checked for presence or absence of tracks after a certain amount of time. Scent stations are used to document long-term trend in populations and though year by year population changes can be speculated (Dexter 2014).

Coyotes (*Canis latrans*) are the most abundant large predator in Minnesota. Based off the scent station data, coyote had a route visitation rate of 25% of routes with detection. Coyote index is well above its long-term average and highest yet recorded in the Farmland Zone, which includes a percent of the Refuge. Part of the Refuge is also in the Transition Zone, which shows that the coyote index has continued on an upward trend from the long-term average and is the highest yet recorded (Dexter 2014). Refuge staff, visitors, and neighbors are reporting increased sightings of coyotes on Refuge lands.

Red foxes (*Vulpes vulpes*) are the most common predator in Minnesota. Red foxes had the highest route visitation rate at 40% of routes with detection. In the Farmland Zone, which includes a percent of the Refuge, showed that red fox index is well below its long-term average. In the Transition Zone, red fox index has undergone fluctuations but is currently near long-term average (Dexter 2014).

According to MNDNR, there is an estimated 800,000 to a million raccoons (*Procyon lotor*) in Minnesota (MNDNR, 2014b). Raccoons had a route visitation rate of 30% of routes with detection based off scent station data. The raccoon index has generally remained above-average in recent years in the Farmland Zone, which includes a percent of the Refuge. The raccoon index for the Transition Zone has remained near long-term average (Dexter 2014). Raccoons are routinely observed on Refuge lands.

Based off the scent station data, striped skunk (*Mephitis mephitis*) had a route visitation rate of 38% of routes with detection. In the Farmland Zone and Transition Zone, which includes the Refuge, showed that skunk index is near its long-term average (Dexter 2014).

Other Mammals

Mammals attracted to aquatic habitats include mink, muskrat, and beaver. The Refuge supports relatively high populations of beaver. River otter, once nearly eliminated in this area, now frequently are seen using Refuge wetlands and river banks. Small mammals typical of Refuge grassland areas include short-tail shrew, deer mouse, thirteen-lined ground squirrel, and plains pocket gopher. Eastern chipmunks and white-footed mouse are commonly found in forested habitats. Both big and little brown bats use the Refuge and its associated lands.

Reptiles and Amphibians

Thirty species of reptiles and amphibians have been reported on the Refuge but little is known about their populations or their limiting factors. Many of these, such as the snapping and painted turtles, are associated with marsh and open waters while others, such as the common garter snake and the western hognose snake, occur in oak savanna and prairie. The singing of chorus frogs is prevalent throughout the Minnesota River Valley during the spring, and prairie skinks are observed in the savanna and grassland habitats.

Fish

The Minnesota River is inhabited by an array of fish including game species such as northern pike, largemouth bass, walleye, bluegill, and crappie. Other species include shovelnose sturgeon and catfish. Like most other fresh water systems in the United States, high populations of carp inhabit the Minnesota River and adjacent wetlands. Carp are very abundant and threaten native species by competing for food and increasing the turbidity of the water they inhabit. Due to regular spring flooding, many of the Refuge wetlands contain a diversity of fish that originate in the river. For some species, such as the northern pike these wetlands offer spawning and nursery habitat.

5.3 Threatened and Endangered Species

There are no federally listed as threatened, endangered, proposed or candidate species in the areas of the Refuge proposed for hunting. According to the Twin Cities Ecological Services Field Office there are no federally listed or candidate species in Carver, Scott, Sibley, and Le Sueur counties. Higgins eye pearlymussel (*Lampsilis higginsi*) is a federally Endangered species that exists in Dakota, Hennepin and Ramsey counties. However, this species range is limited to the Mississippi and St. Croix Rivers, neither of which are within the Refuge boundary.
Prairie bush-clover (*Lespedeza leptostachya*), found on native prairie with well drained soils, is a federally threatened species whose range includes Dakota County. The Black Dog Unit is the only Refuge unit in Dakota County and does not include habitat appropriate for prairie bush-clover.

5.4 Cultural Resources

Archeological records show evidence of all cultural periods spanning from the retreat of the glaciers to the present day on the Refuge. Known and potential sites include prehistoric isolated finds, camps, villages, subsistence and procurement stations, quarries, and mounds and human burials. Post Western culture contact Indian villages, trading posts, homesteads, farmsteads (buildings and land), other rural buildings and structures, cemeteries, trails, roads, and railroads, ferries, conservation projects, drainage ditches, open pit mines (e.g., gravel), sacred sites, cultural hunting and gathering areas, and battlefields also occur in the Refuge vicinity. Although American Indian peoples currently live in the vicinity of the Refuge, the Service does not own or manage any American Indian ceded lands.

5.5 Economic Resources

The Refuge lies within a heavily populated urban-suburban area. Recent Refuge expansion activities are moving into exurban-rural areas. Socioeconomic conditions are wide ranging and reflect the dynamic nature of development occurring within the Twin Cities Metropolitan Area and surrounding areas. A resilient economy is spread among agriculture, food processing, computing, printing and publishing, large and small-scale manufacturing, health care, arts and entertainment as well as medical instruments, education and finance. The Metropolitan area is home to about 2.85 million people, and is the 16th largest metropolitan area in the country (Metropolitan Council 2010). The area population increased by 11.8 percent from 1995 to 2005, compared with a 10.0 percent increase for the state of Minnesota and a 11.4 percent increase for the U.S. as a whole. Per capita income in the area is about $42,500 per year. Income increased by 16.4 percent over the 1995-2005 period, while the state of Minnesota and the U.S. increased by 17.3 and 13.2 percent respectively (Metropolitan Council 2010).

The Refuge itself has an annual operating budget of about $2.2 million and currently provides jobs for 25 full-time and part-time staff. This returns about 3.6 million dollars to the local economy (Carver and Caudill 2007). Based upon 2006 data (Carver and Caudill 2007) updated to reflect 2009 visitation levels and rates of inflation (U.S. Department of Labor 2010), resident and nonresident Refuge visitors annually spend about $8.4 million dollars on Minnesota Valley National Wildlife Refuge based recreational activities. These expenditures include food, drink, lodging, transportation, and equipment.

5.6 Recreational Opportunities

The Twin Cities Metropolitan Area hosts a rich natural environment. Each season offers ample opportunity to explore the natural world in a variety of contexts. Twin Cities parks and lakes are extensive with about 160,000 acres of parkland and 950 lakes in the metro area alone. The Twin Cities region is home to one of the country's largest urban park systems, including 35 regional parks, 11 large regional park reserves, and 22 regional trails. Four state parks are within the region: William O'Brien, Fort Snelling, Afton, and the Minnesota Valley State Recreation Trail (Metropolitan Council 2010). Hiking, fishing, swimming, golfing, skiing, snow shoeing, boating, and bike riding are all popular and accessible recreational activities offered at some or all of these parks.

The focal points of the Refuge are its two Education and Visitor Centers. The Bloomington Visitor Center, located in the most downstream and urban portion of the Refuge in Bloomington, Minnesota, features 8,000 square feet of exhibit space, a 125-seat auditorium, two multi-purpose classrooms, a bookstore, an art gallery, and an observation deck. The Rapids Lake Education and Visitor Center, located about 34 river miles upstream in Carver, Minnesota, hosts an interpretive exhibit area, two multi-purpose classrooms, and a bookstore. Environmental education and interpretation are conducted from these facilities. Additional interpretive programs conducted by Park Rangers and volunteer naturalists are offered on numerous Refuge Units. With the exception of closures around administrative buildings and near nesting sites, the Refuge is open for wildlife-dependent uses including wildlife photography, environmental education, interpretation, hunting, fishing and wildlife observation. The Refuge has about 230,000 visitors annually. Hunting is the second most popular wildlife-dependent use of the Refuge following wildlife observation. The Refuge had about 16,500 hunting visits in 2012-2013 hunting season (Table 5.6) (USFWS 2013).

Table 5.6: Number of hunt visits by hunting activity for 2012-2013 hunting season.

Hunting activity	Number of visits for the 2012-13 season
Waterfowl	7,000
Big game	5,000
Upland game	4,000
Other migratory birds	500

Non-Service lands are interspersed with Refuge lands throughout the Minnesota River Valley. Many are public lands that support outdoor recreation activities similar to the Refuge, as well as activities not allowed on the Refuge, such as mountain biking, horseback riding, and snowmobiling. Developed and proposed sections of the Minnesota Valley State Recreational Trail crosses several Refuge units.

Hunting, fishing, and related outdoor activities are popular pastimes throughout the state, even within the Twin Cities Metropolitan Area. Migratory bird hunting is in high demand on the Refuge because of its proximity to the urban population (MNDNR 2006b), allowing hunters to easily access these areas to hunt in the morning or after work. Portions of five Refuge Units are open to the general public for waterfowl hunting. Pheasant and dove are very popular upland hunting pursuits. Turkey hunting continues to grow in popularity among Minnesotans. White-tailed deer are extremely abundant on the Refuge. Deer hunting is the most prevalent hunting activity on the Refuge in terms of hunter visits. Deer hunting by all methods accounted for 53% of Refuge hunting visits. Archery deer hunters comprise 39% of all Refuge hunting visits. Waterfowl hunters account for 33% and upland game hunters account for 14%. Turkey hunters account for two percent of Refuge hunting visits.

6.0 ENVIRONMENTAL CONSEQUENCES

This section evaluates the foreseeable environmental consequences of the alternatives described in Section 4.

6.1 Environmental Consequences Common to Developed Alternatives

6.1.1 Infrastructure

Providing hunting opportunities under either alternative will not adversely affect, temporarily or permanently, the Service's ability to meet land use goals on any of the units open to hunting. Any additional refuge facility development, such as trailheads or parking lots, will not be for the sole use of hunters and would be developed under either alternative. Parking areas and trailheads will be used by all users of the Refuge, including staff conducting day-to-day operations critical to the mission of the Refuge. There will be a change in wildlife habitat where parking lots and trails are developed as those areas are converted to short grass, gravel, or bare soil. These developed areas will be small relative to surrounding habitat and their development will not appreciable affect wildlife use of the areas.

6.1.2 Natural Resources

6.1.2.1 Habitats

The selection of either alternative would not have significant adverse effects on the quality of wildlife habitat or the natural environment. In either instance, the amount of habitat by type would not change from the current situation. With either alternative, some minor trampling of vegetation from hunters using areas other than established trails is expected. We estimate that any specific acre of Refuge land open to hunting is likely to receive two visits total from hunters per year.

Access throughout Refuge units for hunting is typically by foot. Occasionally hunters access some Refuge units via boat from the Minnesota River. This method of access presents no significant adverse impacts to Refuge lands. Some hunters ride bikes along authorized bike routes to access hunting areas. This does not cause significant adverse impacts. On occasion the Refuge allows vehicles beyond parking lots or trailheads to facilitate disability accessible or youth hunts which is strictly regulated by Special Use Permit (SUP). These permits restrict

vehicles to existing trails, service roads, or designated routes and, therefore, cause no additional impacts to Refuge habitats.

Impacts to Refuge soils and vegetation by hunters are minimal. Hunting is conducted on foot mostly by individuals or small groups. Typically hunter groups travel in dispersed patterns so soil compaction and vegetation trampling will be minimal.

Boating activity on the Refuge may occur with waterfowl hunting. When waterfowl hunting by boat, hunters would have limited dispersion and in most cases would stay in close proximity to the watercraft. Because Refuge users, including hunters are not allowed to use motorized boats there will be no impacts to air quality or solitude from hunting from boats.

Other potential types of habitat damage specifically attributed to hunting activities, such as littering, are not significant. Refuge-specific regulations limit the adverse impact of activities such as cutting of vegetation and the use of screw in steps, through their prohibition.

With the exception of resident Canada geese and white-tailed deer, populations of hunted species are not at levels that could cause habitat damage. The Service has not observed goose damage to habitats on the Refuge. Geese grazing off the Refuge may cause minor problems in isolated areas; however, the Service has not linked Refuge flocks to specific damage or nuisance complaints. Neither Alternative includes actions to significantly change the number of geese taken via hunting.

When populations are high, deer may damage habitat on the Refuge or on nearby public and private lands. Deer have a central role influencing the absolute and relative abundance of both woody and herbaceous plant species. High deer densities can hamper the regeneration of several valuable hardwood and understory plant species by overgrazing (Waller et al. 1997). Long term studies on deer and woody plant species, such as upland beech-maple (*Fagus-Acer*), have concluded that deer browsing was an important environmental factor in determining seedling longevity and mortality (Waller et al. 1997; Horsley et al. 2003). Low vegetation diversity can reduce other wildlife diversity that share habitat with white-tailed deer (Horsley et al. 2003). The Service receives few complaints of deer damage from suburban landowners adjacent to the Refuge. Although deer densities are above the desired level set by the Minnesota Valley Deer Management Task Force, the implementation of either Alternative would only slightly change overall amounts of adverse impacts on habitat due to deer.

6.1.2.2 Wildlife

Hunting may have minor temporary impacts to the general population of animals, both game and non-game species. Some animals will be disturbed as hunters move through occupied habitat or discharge firearms. Disturbed animals will relocate to avoid hunters or flush and expend more energy than if they had remained at rest. Disturbance is not a long term threat to the population because the relocation is temporary and wildlife food is not a limiting factor on the Refuge so animals should be able to readily replace energy reserves. Individuals of game species will be removed from the population by hunter harvest. The impact of harvesting game animals to the population is regulated through bag limits and season length.

Hunting is a highly regulated activity compared to non-hunting activities and generally takes place at specific locations, times, and seasons. These regulations reduce the impact to non-hunted species. Non-hunted areas also are common on the Refuge and provide non-hunted species habitat undisturbed by hunters during the hunt season. Hunting is an appropriate wildlife management tool that can be used to manage harvestable game populations on a Refuge. Some wildlife disturbance will occur during the hunting season. However, when hunting is implemented with proper zoning, regulations, and seasons, hunting impacts to non-hunted wildlife populations using the Refuge will be minimized.

In Minnesota, species to be hunted, hunting seasons, and the number of animals allowed to be taken are set by the MNDNR. In developing annual hunting regulations the MNDNR considers species population trends, the number of hunters pursuing species, and hunter success rate. Overall, wildlife residing on the Refuge exhibits the same population trends and responds to hunting pressure in the same manner as wildlife elsewhere throughout the State. Because Refuge lands are interspersed with lands where hunting is regulated by others and individual wildlife range freely across jurisdictions, the effect of hunting species on Refuge lands will follow statewide trends. For general public hunting activities, the Refuge has not required, and is not proposing to require, hunters to register to hunt Refuge lands or to report wildlife taken on the Refuge. Our best estimate of hunter activity comes from law enforcement contacts and staff contacts with hunters in the field and from car counts. This enables us to approximate hunter visits by general hunting categories but not actual number of hunters because not all hunters are contacted and some hunters are contacted multiple times over several visits.

In addition to firearms and archery, falconry is a hunting method of take that is legal in the State of Minnesota. According to the Minnesota Falconers Association, only 25 falconers in the metropolitan area of the Twin Cities use their birds for hunting. These falconers spend about 28 days each season hunting with the birds and sometimes hunt lands other than the Refuge. The Association estimates that 264 rabbits and squirrels are taken each year by falconers statewide. Falconers also take about 40 pheasants and 39 ducks annually. Rarely does a falconer go after any other migratory birds, since very few Minnesota falconers specialize in raptors that are capable of taking these other types of birds (Nezworski, 2011). The number of game animals taken by falconry are an insignificant part of the overall hunting harvest on the Refuge.

6.1.2.2.1 Hunted Migratory Birds

The Harvest Information Program (HIP) is an annual program in which hunters provide information that helps biologists manage North America's migratory game bird populations, including woodcock, ducks, geese, rails, snipe, and coot. Hunters' reports on the kind and number of migratory birds they harvest are used to develop reliable estimates of the total harvest of all migratory birds throughout the country. The information gathered by the harvest surveys assists state and federal biologists in making decisions about sustainable bag limits for future hunting seasons. Harvest information gathered through HIP helps ensure that hunting on the Refuge under either alternative will not significantly impact hunted migratory bird populations (Dexter 2014).

The harvest estimate, number of hunters, hunter success rate, and mean harvest per hunter during the 2012-13 season is indicated in Table 6.1.2.2.1 (Dexter 2014). About 95% of Refuge migratory bird hunters pursue waterfowl and account for about 5,981 hunter visits over a 60 day season. Season lengths and species limits for waterfowl are set at a flyway level to assist in preventing the overharvest of these species. The hunting framework for waterfowl is developed based on information collected by biologists across the country (in addition to HIP) for the purpose of estimating population levels of waterfowl. Waterfowl hunting on the Refuge under either alternative is subject to the framework set by the flyways and therefore will not significantly affect waterfowl populations.

Woodcock and snipe are minor species for Refuge hunters and few birds are taken on the Refuge. Including woodcock and snipe as huntable species in the Refuge's hunting program will have an insignificant effect on flyway populations. Mourning dove hunting was added in Minnesota in 2004 and the Refuge was opened to dove hunting in 2010. Dove seasons and limits are set under the national migratory bird hunting and adaptive management frameworks. Because Refuge dove hunting also is regulated within this framework, dove hunting on the Refuge will not have a significant effect on the local, flyway, or national populations. Rails and gallinules (moorhens) are also hunted in the State of Minnesota although large numbers of either species are not taken. The Service estimates that less than 10 hunter visits are devoted to rails, snipe and woodcock. As with all migratory birds, the Service and MNDNR monitor populations at local and flyway levels and adjust bag limits to prevent adverse effects to the populations of these species due to hunting.

Table 6.1.2.2.1: Minnesota estimated migratory bird harvest, number of hunters, hunter success rate, and mean harvest per hunter for the 2012-13 season.

Species	Estimated harvest for 2012-13 State hunting season	Estimated number of 2012-13 statewide hunters	Hunter success rate (%)	Mean harvest per hunter
Ducks	730,370	90,400	87	10.6
Canada geese	296,040	64,990	77	6.3
Other geese	6,750	4,110	53	4.2
American coot	14,740	4,700	80	4.8
Common snipe	1,470	1,260	53	2.1
Rails/gallinules	390	590	29	1.0
American woodcock	25,980	14,000	68	3.3
Mourning dove	77,790	10,730	77	11.6

6.1.2.2.2 Upland Game

The harvest management of small upland game which includes huntable small mammals (squirrel, rabbit, and hare) and upland game birds (pheasant, grouse, gray partridge) is based on the understanding that small game species produce a large number of young each year, most of which are available for harvest because they would naturally not survive the winter and add to the next season's breeding population. Hunting these species is considered a compensatory form of mortality. It allows that a large portion of a species population could be harvested each fall because, if not taken by hunters, they would likely die prior to the next breeding season from

other causes. Compensatory mortality does not reduce subsequent spring breeding population size below what it would have been due to natural mortality. It follows that hunting mortality is compensated by a reduction in natural mortality. This concept of animal surplus relates especially well to r-selected species (i.e., small game animals having high potential for population increase with high annual mortality rates). For example, the annual mortality rate for squirrels can be upwards of 0.40, and cottontail rabbits are known to have up to 0.80 annual mortality rates. Based on this, MNDNR, which administers small game hunting in Minnesota, does not set limits on the overall harvest of huntable small mammals and resident birds, except turkey. The MNDNR does set daily bag limits and possession limits as the primary method of harvest regulation. Bag limits and possession limits do not vary for upland game regardless of method of take.

Turkeys

Turkey hunting is allowed in the State of Minnesota by permit only in both the spring and fall seasons. In the spring of 2013, 34,281permits were issued statewide with hunters harvesting 10,390 birds statewide. Hunters' success averaged 30% (Dexter 2014). In the previous fall (2012) 10,779 permits were issued statewide with 1,753 turkeys being harvested statewide.

The MNDNR has been increasing the number of permits in recent years as turkey populations have increased. They expect the turkey population to continue to increase in the Refuge vicinity because of the abundance of suitable habitat. In some areas of the state, the MNDNR has started to receive complaints about too many turkeys (MNDNR 2006a). The MNDNR bases the number of permits allotted to the Permit Areas that encompass the Refuge based upon the turkey and hunter populations (Dunton 2010a, Dunton 2010b), not the availability of Refuge lands open to hunting.

Most of the Refuge lies within Turkey Permit Area 510, except for the St. Lawrence, Blakeley, and Jessenland Units. In spring 2013, 2,788 turkey permits were issued for permit area 510 and hunters took 886 turkeys. The success rate in this area was approximately 21% (Dexter 2014). The previous fall (2012), 1,144 permits were issued in area 510, with hunters reporting 147 harvested turkeys and a 13% success rate (Dexter 2014). In spring 2013, 3,150 turkey permits were issued for the Permit Area 505 encompassing the St. Lawrence, Blakeley and Jessenland areas and hunters took 908 turkeys. The success rate for spring turkey hunters in this area is approximately 29% (Dexter 2014). The previous fall (2012), 788 permits were issued with 126 turkeys being harvested. The Refuge provided about 90 turkey hunter visits in the fall 2010; with a 30 day season, these visits may have represented as few as 5 – 10 hunters and 1 – 3 turkeys harvested.

Considering that turkeys are a closely managed species, the number of permits issued for the Permit Area, and the relatively small proportion of the permit area that Refuge lands comprise, it is reasonable to conclude that hunting turkeys on the Refuge under either alternative has no significant adverse impact on local, regional, or state turkey populations. Bag limits and possession limits do not vary for turkey regardless of method of take.

Hunted Resident Birds

Most Refuge upland game hunters are pursuing resident game birds, primarily pheasant and gray partridge. The harvest estimate, number of hunters, hunter success rate, and mean harvest per hunter during the 2012-13 season is indicated in Table 6.1.2.2.2.1 (Dexter 2014). These hunters account for 80% of upland game hunting visits and 23% of all hunting visits. The Long Range Plan for the Ring-necked Pheasant in Minnesota (MNDNR 2005) calls for increasing the pheasant harvest from its 2005 level of 360,000 roosters to 750,000 by 2025. This increase is linked to the MNDNR's goal to also increase new grassland habitat acres. Refuge pheasant and partridge hunters most likely are not as successful as the state average because pheasant and partridge densities, and hunting prospects, are ranked "poor or very poor" for the state region that includes the Refuge (MNDNR 2005). We do not anticipate many ruffed grouse being taken by hunters on the Refuge because we are out of the primary range of this species. Based on this information and the understanding that upland game hunting, which includes these upland game birds, is considered compensatory mortality; the hunting of pheasants, gray partridge, and ruffed grouse on the Refuge will not have an appreciable adverse effect on the species locally, regionally, or statewide.

Table 6.1.2.2.2.1: Minnesota estimated hunted resident bird harvest, number of hunters, hunter success rate, and mean harvest per hunter for the 2012-13 season**.**

Species	Estimated harvest for 2012-13 State hunting season	Estimated number of 2012-13 statewide hunters	Hunter success rate (%)	Mean harvest per hunter
American Crow	95,430	12,660	90	8.4
Ring-necked pheasant	264,310	84,270	66	4.8
Ruffed grouse	355,130	97,190	70	5.2
Gray partridge	6,040	3,270	54	3.4

Hunted Small Mammals

The harvest estimate, number of hunters, hunter success rate, and mean harvest per hunter during the 2012-13 season is indicated in Table 6.1.2.2.2.2 (Dexter 2014). Hunters pursuing squirrels and rabbits account for about 100 hunter visits to the Refuge which comprise about 15% of small mammal hunting on the Refuge. Hunters rarely take hares or jackrabbits on the Refuge. Based on this information and the understanding that small mammal hunting is considered compensatory mortality, hunters of rabbits and squirrels are not substantially adversely affecting those populations on the Refuge.

Table 6.1.2.2.2.2: Minnesota estimated small mammal harvest, number of hunters, hunter success rate, and mean harvest per hunter for the 2012-13 season.

Species	Estimated harvest for 2012-13 State hunting season	Estimated number of 2012-13 statewide hunters	Hunter success rate (%)	Mean harvest per hunter
Gray squirrel	137,280	29,350	77	6.0
Fox squirrel	56,850	16,770	79	4.3

Eastern cottontail	67,000	18,620	69	5.2
White-tailed jackrabbit	2,850	2,520	60	1.9

Non-hunted Resident Wildlife and Migratory Birds

Non-hunted wildlife include non-hunted migratory birds such as songbirds, wading birds, raptors, and woodpeckers; small mammals such as voles, moles, mice, and shrew; reptiles and amphibians such as snakes, skinks, turtles, lizards, salamanders, frogs, and toads; and invertebrates such as butterflies, moths, other insects and spiders. Except for migratory birds and some species of migratory butterflies and moths, these species have very limited home ranges and hunting does not effectively impact their populations regionally.

Disturbance to non-hunted wildlife under either alternative is minimal. Small mammals such as voles and mice are generally nocturnal or secretive. Both of these qualities make hunter interactions with small mammals very rare. Hibernation or torpor of cold-blooded reptiles and amphibians also limits their activity during most of the hunting season when temperatures are low. Hunters would rarely encounter reptiles and amphibians during most of the hunting season. Some species of butterflies and moths are migratory and will not be present for most of the Refuge's hunting season. Resident invertebrates are not active during cold weather and would have few interactions with hunters during the hunting season. Impacts to these species due to habitat disturbance related to hunting are negligible at the local and flyway levels.

Direct impacts to non-hunted non-migratory birds such as most woodpeckers and some songbirds including nuthatches, finches, and chickadees are negligible. Secondary impacts to this group of species are also minimal and do not appreciably reduce their numbers at the population level. Shorebirds would not be impacted by hunting since, in most cases, they have already migrated through the area prior to the fall hunting season. Disturbance by hunting to non-hunted migratory birds would not have substantial negative secondary impacts because the majority of hunting does not coincide with the nesting season except in the case of spring turkey hunting. Because turkey hunting is strictly apportioned by quotas within a lottery system and of relatively short duration (30 days) any disturbance to non-hunted species would be minimal. Other disturbance to these species by hunters afield would be temporary in nature. The Refuge has identified important resting and feeding areas for migratory water birds and has designated them as no hunting zones.

Migratory birds of prey (eagles, hawks, etc.) are on the Refuge during hunting season but disturbance is minimal. Disturbance to the daily wintering activities, such as feeding and resting, of residential birds might occur but are insignificant because such interactions are infrequent and of short duration when they do occur. Non-toxic ammunition is required for migratory bird and upland game hunting reducing the potential of lead poisoning to birds of prey. Avian predators and scavengers are susceptible to lead poisoning when they ingest lead fragments or pellets in the tissues of animals killed or wounded by lead ammunition. Lead poison may weaken raptors and increase mortality rate by leaving them unable to hunt or more susceptible to vehicles or power line accidents (Kramer and Redig 1997).

Overall, hunting impacts to non-hunted species and their habitats and impacts to the biological diversity of the Refuge will be insignificant.

6.1.2.2.3 Big Game

A total of 186,634 white-tailed deer were harvested in Minnesota for the 2012 deer hunting season. For 2012, hunters from deer permit areas that include the Refuge (areas 291, 338, and 601) harvested 2,660 deer (Dexter 2014). Overall, Refuge Units open to deer hunting comprise less than 10% of these permit areas. Deer hunters comprise about 53% of Refuge hunting visits; this amounted to about 9,600 hunter visits in 2009. These deer hunter visits were spread across the 104 days for which the portions of Refuge are open to deer hunting, and is inclusive of the 23 day regular firearms season, the additional 16 days outside this season for special firearms seasons (i.e., 2 days early antlerless season and 14 days for muzzleloader season), and the 104 day archery season, which overlaps the aforementioned firearms seasons. Archers represent about 7,000 (73 %) of deer hunting visits. Having the Refuge open to deer hunting does not result in a change in the number of antlerless permits issued by MNDNR because these permits are administered on a much larger scale.

The desire of the Minnesota Valley Deer Management Task Force is to reach a population goal for the deer herd in the Minnesota River valley at 15-25 deer per square mile (Minnesota Valley Deer Management Task Force 1990). Currently the Metro Deer Management Area (MNDNR Permit Area 601) has no limit on the number of antlerless deer that can be harvested. The majority of the Refuge is located in this Permit Area and due to the urban nature of this Permit Area, which limits hunter access to deer; even this level of regulation has not been able to reduce the deer population to a point where this species no longer negatively impacts the existing natural habitat.

6.1.3 Threatened and Endangered Species

It is the policy of the Service to protect and preserve all native species of fish, amphibians, reptiles, birds, mammals, invertebrates, and plants, including their habitats, which are designated threatened or endangered. There are no species Federally listed as threatened, endangered, proposed or candidate in the areas of the Refuge proposed for hunting. According to the Twin Cities Ecological Services Field Office there are no federally listed or candidate species in Carver, Scott, Sibley and Le Sueur counties. Higgins eye pearlymussel (*Lampsilis higginsi*) is a federally Endangered species that exists in Dakota, Hennepin and Ramsey counties. However, this species range is limited to the Mississippi and St. Croix Rivers, neither of which are within the Refuge boundary. Prairie bush-clover (*Lespedeza leptostachya*), found on native prairie with well drained soils, is a federally threatened species whose range includes Dakota County. The Black Dog Unit is the only Refuge unit in Dakota County and does not include habitat appropriate for prairie bush-clover.

No Federally-listed, proposed, or candidate species would be affected by either alternative. The Refuge completed an Intra-Service Section 7 evaluation as required by Service policy for compliance with the Endangered Species Act (Appendix E).

6.1.4 Cultural Resources

Impacts to historical or cultural resources would not be significantly different under either Alternative. While historical or cultural resources occur throughout the Refuge units open to hunting, the Refuge has not documented any adverse effect attributed to hunting activities. While most hunters are focused on the hunt itself, it is likely that some hunters come across historical foundations and buildings located on some of the Refuge units while hunting and may pause at signs or features that interpret these resources. Past vandalism at these sites has not been ascribed to hunters. The cultural resources that occur on the Refuge are below ground and not readily identified. Since hunting activities do not include ground disturbing actions, these resources will remain intact.

6.1.5 Social and Economic Impacts

Hunting activities on the Refuge can affect the local or regional economy in two ways. First, the Refuge expends funds for staff and resources to implement the hunting program. Second, visitors engaging in hunting activities provided by the Refuge generate economic activity for local businesses.

It is estimated that the Refuge spends about $66,000 per year for staff and operations related to the hunting program. These monies mostly are spent in the region and produce a multiplier effect for local businesses valued at about $109,600 (Carver and Caudill 2007, U.S. Department of Labor 2010).

The 2006 report, "Banking on Nature: The Economic Benefits to Local Communities of National Wildlife Refuge Visitation" (Carver and Caudill 2007) identified average daily expenditures for different types of hunting in the USFWS Midwest Region. The expenditures included food, drinks, lodging, transportation, equipment, and other expenses. Based upon expenditures updated to reflect 2009 values (U.S. Department of Labor 2010) and visitation rates for Minnesota Valley National Wildlife Refuge (USFWS 2009), Refuge hunters accounted for 18,125 visitor days and spent about $430,000.

Deer-vehicle accidents may be an important economic consideration related to the Refuge's hunting program. Although deer population density is only one factor in deer vehicle accident rates, a 1992 - 1994 deer reduction program in the vicinity of the Refuge reduced deer vehicle accidents by 30 percent; i.e., 22 incidents (Doerr et al. 2001). The average cost of repair following a deer vehicle collision is about $2,100 (Conover 1995, U.S. Department of Labor 2010). In Minnesota there were 2,488 deer-related motor vehicle collisions, with 505 of the 2,488 being in the 6 counties that the Refuge resides within (Table 6.1.5) (MNDPS 2013). Because neither Alternative evaluated by this EA is expected to significantly reduce deer numbers, deer vehicle accidents and their associated costs would continue.

Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" was signed by President Clinton on February 11, 1994, to focus federal attention on the environmental and human health conditions of minority and low-income populations with the goal of achieving environmental protection for all communities. The Order directed federal agencies to develop environmental justice strategies to aid in identifying and addressing disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income

populations. The Order is also intended to promote nondiscrimination in federal programs substantially affecting human health and the environment, and to provide minority and low-income communities' access to public information and participation in matters relating to human health or the environment. None of the management alternatives described in this EA will disproportionately place any adverse environmental, economic, social or health impacts on minority and low income populations.

Table 6.1.5: 2012 deer-related motor vehicle collisions in the 6 counties that the Refuge resides within.

County	Fatal Crashes	Injury Crashes	Property Damage Only Crashes	Total Crashes
Carver	0	4	98	102
Dakota	0	12	150	162
Hennepin	0	15	122	137
Le Sueur	0	1	47	48
Scott	0	3	43	46
Sibley	0	1	9	10
Total	**0**	**36**	**469**	**505**

6.1.6 Recreational Opportunities

The implementation of either hunting program alternative will have minimal adverse effect on the non-hunting priority public uses for the Refuge (i.e., fishing, wildlife observation and photography, environmental education and interpretation). Most non-hunting recreational activities are separated from hunting activities over time for the seven months of the year when hunting is not offered. In addition, hunting activities are separated through space on certain areas of the Refuge. Hunting is not allowed on all Refuge units or on all areas of units that are open to hunting. Hunting is not allowed near parking lots, trails, or areas designated for outdoor education or interpretation. Further, Refuge-specific regulations have been established with the intent of reducing conflicts between these user groups and emphasizing safety for all visitors. Brochures and interpretive signs allow visitors to know where and when hunting is taking place on the Refuge to allow visitors to make informed choices for their recreational activities. Some visitors may decide to change where they pursue their non-hunting recreational activities or decide to come back outside the hunting season.

Only non-toxic ammunition may be used or possessed on the Refuge where hunting firearms are allowed. Lead is a common metal used in the manufacturing of hunting ammunition due to it being inexpensive and efficiency as a projectile. Alternatives to lead-based ammunition are copper, steel, tungsten, tin and bismuth ammunition. Non-toxic ammunition is becoming more available as the demand for non-toxic ammunition increase (Kelly et al. 2011). Cooper ammunition is a good alternative since it is less toxic and frangible than lead ammunition (Hunter et al. 2006). Popular hunting periodicals routinely have articles on why and how hunters can shift to non-toxic ammunition. Overall the cost differential for using non-toxic verses toxic ammunition for hunting, is insignificant.

Falconry is allowed on all Refuge Units that are open to general public hunting according to State regulations.

Secondary adverse effects to non-hunting recreational activities are insignificant because neither alternative will significantly reduce the numbers of wildlife available for priority public use.

6.1.7 Cumulative Impacts

The implementation of either alternative has no significant cumulative impacts on the wildlife populations, either hunted or non-hunted species; the natural environment; cultural resources; social and economic resources; or recreational opportunities. This determination is based on an analysis of potential environmental impacts of hunting on the Refuge together with other projects and actions.

6.1.7.1 Infrastructure

No infrastructure, on the Refuge or off the Refuge, will be modified solely to accommodate the Refuge's hunting program. Implementing a hunting program as described in either Alternative A or Alternative B will have minimal direct or indirect impacts on public or private infrastructure. Therefore, there will be negligible cumulative impacts to infrastructure at the local, regional, or national level due to administering the hunting program at the Minnesota Valley National Wildlife Refuge as described in either alternative.

6.1.7.2 Natural Resources

Habitats

The Refuge Act identified the purposes for which the Refuge was established (Section 1.0). The Refuge's CCP (USFWS 2004) further refines those purposes and identifies goals and strategies that would enable the Refuge to fulfill its mission. In implementing the CCP the Service conducts habitat management actions that favor healthy and functional ecological communities on Refuge lands. This approach benefits all wildlife species, including species traditionally hunted. Refuge habitats are not managed to favor hunted species over other species and are managed to maintain healthy populations of all species. In addition, Refuge regulations are devised to minimize any damage to habitats created by hunters and other Refuge visitors. The implementation of either alternative does not result in significant direct, indirect, or cumulative effects to habitats at any scale due to hunting activities.

There are only a few localities on the Refuge or in the vicinity of the Refuge where densities of wildlife populations are at a level that could result in habitat damage. These areas potentially damaged by geese or deer, for example, are not significant on the local scale or in the regional or national context. With such minor impacts based on few animals, any change in animal populations on the Refuge will be inconsequential in a larger context. If nuisance populations of geese or deer become managed by a coordinated effort of organizations at all levels of government in the area, then there may be some improvement in habitat conditions at specific targeted locales. It is not likely that such actions, while positive from a habitat perspective, will result in a significant cumulative impact on any area.

Wildlife

Refuges, including Minnesota Valley National Wildlife Refuge, conduct hunting programs within the framework of State and Federal regulations. Population estimates of huntable species are developed at a regional, state, flyway, and continental scale. Hunting frameworks and take limits are set based upon these estimates. The proposed Refuge hunting program rules will be the same as, or more restrictive than, hunting regulations throughout the State of Minnesota. By maintaining hunting regulations that are the same as or more restrictive than the State, individual Refuges ensure that they are maintaining seasons which are supportive of management on a more regional basis. Such an approach also provides consistency with large scale population status and objectives. The Refuge consistently coordinates with the State about the hunting program. As a result, changes or additions to hunting on the Refuge will have minor effects on wildlife species in Minnesota. Although the Preferred Alternative will increase hunting opportunities slightly compared to the No Action Alternative, the slight increase in hunter activity will not rise to a significant cumulative effect locally, regionally, or nationally.

Migratory Birds

The Migratory Bird Treaty Act stipulates that all hunting seasons for migratory game birds are closed unless specifically opened by the Secretary of the Interior. The Service annually promulgates regulations (50 CFR Part 20) establishing the Migratory Bird Hunting Frameworks from which States may select season dates, bag limits, shooting hours, and other options for the each migratory bird hunting season. The Frameworks are permissive in that hunting of migratory birds would not be permitted without them. Thus, Federal regulations both allow and limit the hunting of migratory birds.

National Environmental Policy Act (NEPA) (Council on Environmental Quality 1969) considerations by the Service for hunted migratory game bird species are addressed by the programmatic document, ‘‘Final Supplemental Environmental Impact Statement: Issuance of Annual Regulations Permitting the Sport Hunting of Migratory Birds (FSES 88– 14),’’ filed with the Environmental Protection Agency on June 9, 1988. The Service published Notice of Availability in the Federal Register on June 16, 1988 (53 FR 22582), and Record of Decision on August 18, 1988 (53 FR 31341). Annual NEPA considerations for waterfowl hunting frameworks are covered under a separate Environmental Assessment and Finding of No Significant Impact. Further, in a notice published in the September 8, 2005, Federal Register (70 FR 53776); the Service announced its intent to develop a new Supplemental Environmental Impact Statement for the migratory bird hunting program. Public scoping meetings were held in the spring of 2006 as announced in a March 9, 2006, Federal Register notice (71 FR 12216).

Waterfowl populations throughout the United States are managed through an administrative process known as flyways. The Refuge is located in the Mississippi Flyway. In North America, the process for establishing waterfowl hunting regulations is conducted annually. In the United States, the process involves a number of scheduled meetings (Flyway Study Committees, Flyway Councils, Service Regulations Committee, etc.) in which information regarding the status of waterfowl populations and their habitats is presented to individuals within the agencies responsible for setting hunting regulations. In addition, public hearings are held and the proposed regulations are published in the Federal Register to allow public comment.

Annual waterfowl assessments are based upon the distribution, abundance, and flight corridors of migratory birds. An Annual Waterfowl Population Status Report is produced each year and includes the most current breeding population and production information available for waterfowl in North America (USFWS 2010a). The Report is a cooperative effort by the Service, the Canadian Wildlife Service, various state and provincial conservation agencies, and private conservation organizations. An Annual Adaptive Harvest Management Report (AHM) provides the most current data, analyses, and decision making protocols (USFWS 2010b). These reports are intended to aid the development of waterfowl harvest regulations in the United States for each hunting season. In Minnesota, the MNDNR selects season dates, bag limits, shooting hours, and other options using guidance in these reports. Their selections can be more restrictive, but cannot be more liberal than the AHM allows. Thus, the level of hunting opportunity afforded each State increases or decreases each year in accordance with the annual status of waterfowl populations.

Hunting of migratory birds other than waterfowl is assessed in a similar manner in that species population trends are monitored throughout their range. Via cooperative efforts of public and private partners, populations are monitored when birds are most effectively surveyed. Depending on the species, this may be while they are in their wintering areas, breeding areas, or while migrating. These data are combined with harvest information, such a HIP, and evaluated to ensure an appropriate annual hunting framework throughout the species range.

Each National Wildlife Refuge considers the cumulative impacts to hunted migratory species through the Migratory Bird Frameworks published annually in the Service's regulations on Migratory Bird Hunting. Season dates and bag limits for National Wildlife Refuges open to hunting are never longer or larger than the State regulations.

Upland game

Harvest management of upland game except turkey is based on the compensatory mortality model. In this model the concept is that these hunted species will not suffer adverse impacts under typical hunting frameworks. Population impacts may become additive, and adverse, if some mortality factor significantly increases. There is no natural or human-induced mortality factor rising to the additive level for upland game to be hunted at the Refuge that would result in significant cumulative impacts in the local or regional context.

Turkey populations are increasing locally and throughout the state. There is no adverse impact to turkeys due to either hunting or non-hunting factors. Hunting turkeys on Refuge lands will not result in any factors changing in a manner that results in cumulative impacts.

White-tailed Deer

White-tailed deer in the vicinity of the Refuge move freely across property boundaries. In the vicinity of rural Refuge units deer population densities are relatively close to target densities compared to the more urban Refuge units where deer hunting is limited. Hunting on rural units may be contributing to overall population management goals -- a desirable cumulative effect. On urban Refuge units, deer population densities are much higher than target densities. Although it currently does not appear at this time that deer on urban Refuge units are significantly stressed

due to overpopulation, an adverse density-dependent population response is possible in the future.

Nongame
Non-hunted species of vertebrate or invertebrate wildlife are not significantly directly nor indirectly affected by hunting. With no direct or indirect adverse impacts to non-hunted species there will be no cumulative impacts resulting from the implementation of either hunting Alternative on the Refuge.

6.1.7.3 Threatened and Endangered Species
No threatened or endangered species occur in areas where Refuge hunting would take place so no cumulative impacts will occur.

6.1.7.4 Cultural Resources
Refuge hunting activities do not affect cultural resources under either alternative so there will be no cumulative impacts to such resources.

6.1.7.5 Social and Economic Resources
Economic activity estimated at about $450,000 annually is associated under either alternative. This economic activity, while important to the communities near Refuge units (Section 6.1.5), is minor in the larger context of the Twin Cities Metropolitan Area with its billions of dollars of economic activity.

The Refuge's presence in the Metropolitan Area increases the quality of life for some area residents. Even though hunting accounts for the second most user visits, it accounts for less than 10% of use activity. There are no other hunting-specific activities undertaken by the Service on the Refuge that have significant beneficial or adverse effects when compared to or combined with other socially important activities in the area. Refuge hunting activities under either Alternative do not produced significant cumulative effects.

6.1.7.6 Recreational Opportunities
A hunting program implemented under either Alternative evaluated by this EA will provide recreational opportunities for Refuge visitors. These opportunities, while fully appreciated by refuge users wishing to hunt, are important in the urban context where hunting opportunities are limited. In a regional or statewide context, hunting on the Refuge units provides only a small percentage of hunting opportunities.

Hunting is not allowed near or around the Bloomington Visitor Center or the Rapids Lake Education & Visitor Center. Other "no hunting" areas have been established. There is no hunting allowed on, across, or within 100 feet of any road, parking lot or marked trail to minimize conflicts between users. Areas on several Refuge units are closed to hunting and provide space for non-hunting visitors to explore and enjoy the Refuge year round. This helps to reduce or eliminate conflicts between hunters and other user groups.

Non-hunting wildlife-dependent recreational opportunities are available on a variety of other public or private lands locally. There are 14 National Wildlife Refuges in Minnesota and

thousands of other public spaces in the state that provide a variety of wildlife habitat suitable for fishing, wildlife observation, photography, environmental education, and interpretation activities. Some non-hunting recreational activities may increase slightly with the transfer of the lands from private ownership to public ownership. However, the increase is not expected to be significant due to the absence of trails and other facilities on those lands. On lands currently under Service ownership, conflicts between recreational user groups are minimal and are expected to remain so. Hunting programs at the Refuge under either Alternative will not result in significant adverse effects at any scale, either by themselves or when combined with non-service actions because of the large amounts of parks and other non-hunted public lands available for non-hunting wildlife-dependent recreation.

6.2 Environmental Consequences of Alternative A: Maintain Current Hunting Programs on Refuge Lands Previously Opened to Hunting and Not Open Recently Acquired Lands to Hunting (No Action)

Hunting Program to remain as it currently exists on Service lands previously opened to hunting. No new target species will be open to hunting. No additional land will be open to general public hunting.

6.2.1 Natural Resources

6.2.1.1 Wildlife

With this alternative, the number of species allowed to be hunted will not change and big game hunting opportunities will stay the same. Some species may increase slightly in local areas; however, it is likely that other compensatory population factors and environmental conditions would prevent significant changes in overall wildlife populations.

Migratory Birds

Under this alternative migratory bird populations will not change appreciably. Without hunting mortality, populations will experience fluctuations from naturally occurring environmental conditions on the lands not hunted with this alternative.

Upland game

Resident birds and mammals such as turkey, pheasant, rabbit, and squirrel populations are not expected to change appreciably. Populations would experience fluctuations from naturally occurring environmental conditions.

Big Game

The white-tailed deer populations on the populations will not change appreciably. Populations would experience fluctuations from naturally occurring environmental conditions, and continue to grow on urban Units.

Furbearers

Under this alternative, hunting mortality would be zero on all 12 Refuge Units.

6.2.2 Recreational Opportunities

All lands proposed to be opened with the Preferred Alternative presently are open to hunting under private ownership. With the lands being recently acquired and transferred to Service ownership, they are closed to hunting. This results in the loss of hunting opportunities on 698 acres of land under Refuge management.

6.2.3 Cumulative impacts

A hunting program implemented under the No Action Alternative will have minor positive and negative direct effects overall. None the less, such effects are insignificant beyond the local area and immediate timeframe. As presented earlier, the effects will not be significant when added to other expected activities. With the recently acquired lands being closed to hunting, there would be no secondary or cumulative impacts accruing offsite to adjacent lands, or larger landscape units.

6.3 Environmental Consequences of Alternative B: Change Hunting Programs on Refuge Lands Previously Opened to Hunting (Preferred Alternative)

With this Alternative the hunting program would be modified to allow 7 new target species (American crow, eastern red squirrel, coyote, red fox, gray fox, raccoon, opossum, and striped skunk). Additionally this Alternative would open 4 Refuge Units (Long Meadow, Bloomington Ferry, Upgrala, and Chaska Units) to general public hunting with a special Refuge permit.

6.3.1 Natural Resources

6.3.1.1 Wildlife

In this section we present estimates of hunting mortality (i.e., take) for several species. These estimates assume that the opened lands have average numbers of huntable individuals, receive average hunting pressure, and hunters experience average success rates. For some species, such as pheasant and dove, we know that these assumptions likely are not reasonable because the lands support less than average habitat quality. For the waterfowl species, it is likely that using averages overestimates the number of animals taken because of the relatively inaccessibility of some waterfowl habitats.

These lands have been hunted under Refuge-specific special hunts for underserved hunting populations (e.g., disabled or youth).

Migratory Birds

Waterfowl and other migratory bird populations would not experience any increase in hunting mortality because lands currently hunted for these species will not change under this Alternative.

Upland Game

The harvest of small upland game (all species excluding turkey) would increase very slightly over the Refuge as a whole with the addition of 2 new target species (American crow and eastern red squirrel). Upland game populations would continue to experience fluctuations from naturally occurring environmental conditions. The removal of certain individuals from the populations due to hunting will have minor effects. The number of turkeys harvested on the Refuge is not expected to change since new Refuge land will not be open to turkey hunting.

Big Game
The Refuge expects a significant change in deer population density near and within Refuge Units where Population Managements are conducted. The Refuge plans to use Population Management hunts with Special Use Permits as part of a deer management strategy to reduce negative environmental and social impacts of high deer density. Deer densities on certain Units are above target densities of 15-20 deer per square mile. Population Management hunts are to occur on specific portions of specific Refuge Units. Population Management hunts are not expected to occur on every Refuge Unit each year and the frequency of the hunts will fluctuate year to year based on the most current species population data. Frequency of hunts on a Refuge Unit will decrease over time as population densities of target species are closer to goal levels. We expect within 5 to 10 years (depending on the Refuge Unit) to be close to goal population density levels. We estimate that about 25-35 deer will be taken annually from the lands opened under this Alternative. The number of deer taken annually is expected to decrease over time as the Refuge reaches its goal deer population density per each Unit.

Furbearers
Furbearers are not currently harvested on the Refuge, but many furbearers are open to hunting statewide (Table 6.3.1.1). Many furbearers are highly secretive in nature and occur in low densities. Based on this information and the understanding that furbearer hunting is considered compensatory mortality, hunters of furbearers are not substantially adversely affecting those populations on the Refuge. Refuge specific regulations limiting season, methods (no hunting dogs), and time (only daytime time hunting), further minimizes any possible negative effects. Based off Table 6.3.1.1., we estimated that about 4 coyotes, 2 red foxes, 2 gray foxes, 2 raccoons, 2 opossums, and 2 striped skunks will be harvest annually under this Alternative.

Table 6.3.1.1: Minnesota estimated furbearer harvest, number of hunters, hunter success rate, and mean harvest per hunter for the 2012-13 season.

Species	Estimated harvest for 2012-13 State hunting season	Estimated number of 2012-13 statewide hunters	Hunter success rate (%)	Mean harvest per hunter
Raccoon	51,660	9,730	92	5.8
Red fox	8,470	6,460	51	2.6
Gray fox	420	2,010	21	1.0
Coyote	53,750	22,470	49	4.9

6.3.2 Social and Economic Resources
By implementing this alternative, annual cost from deer-related damages are expected to decrease. The total economic damage related to high deer densities in the vicinity of urban Refuge units is uncertain, but a reduction in urban deer populations will lower damage. Although deer population density is only one factor in deer vehicle accident rates, a 1992 - 1994 deer reduction program in the vicinity of the Refuge reduced deer vehicle accidents by 30%; i.e., 22 incidents (Doerr et al. 2001). Deer-vehicle collisions near the Refuge where Population Management hunts are conducted are expected to decrease by at least 10%.

6.3.3 Recreational Opportunities

By implementing the preferred alternative lands available for Refuge general public hunt will increase by about 65%. However, due to the types, quality, and accessibility of the habitats, we do not expect all hunting activities to increase significantly by that amount. Only big game and furbearer hunting is expected to increase with this alternative. Big game general public hunting will be limited on certain Refuge's Units by special Refuge permits that control number of hunters.

The Refuge is allowing .17 rimfire and .22 rimfire ammunition to be used in rifles for furbearer and upland game hunting on the most rural Refuge Units (Jessenland and Blakely Units). This ammunition is most often used for squirrel and rabbit hunting and many hunters have a tradition of using it. Allowing the use of rimfire ammunition will provide those with this tradition a place to hunt on the Refuge. The rural Units where we are allowing the use of this specific rimfire ammunition have few developed visitor services amenities. Most public use of these areas mostly is related to hunting and fishing activities. Either allowing or not allowing the use of rimfire ammunition for furbearer hunting likely will have an insignificant effect on the overall numbers of Refuge user visits. Furbearer hunting hours are restricted to daytime hours, same as upland game. No hunting dogs are allowed for furbearer hunting.

Under this alternative, impacts to other wildlife-dependent priority recreational uses on the Refuge are expected to be minimal. Non-consumptive uses are generally highest in spring, summer and early fall. The majority of hunting opportunities take place in fall and winter. However, some impacts to other uses may occur. Visitors using the Refuge during hunting seasons and rural residents near Refuge lands may experience a minor increase in firearms noise disturbance. Non-hunting visitors that snowshoe and/or cross country ski may come across hunters in the field. Some visitors may plan their visits to avoid coinciding with hunting activities. The quality of the visitor experience, including hunter's experiences, would not be significantly altered under this alternative.

6.3.4 Cumulative impacts

A hunting program implemented under the Preferred Alternative will have minor positive and negative direct effects. None the less, such effects are insignificant beyond the local area and immediate timeframe. Considering that context, the effect of opening these areas to hunting will have an insignificant effect on flyway and national populations of these migratory species. As presented earlier, the effects will not be significant when added to other expected activities

6.4 Summary of Environmental Consequences by Alternative

A summary of environmental consequences by alternative are presented in Table 6.4

Table 6.4 – Comparison of Environmental Impact by Alternative

Resource Impact	Alternative A (No Action)	Alternative B (Preferred)
Compatible with the goals of the Refuge	Yes	Yes
Habitat	Impacts such as trampling of vegetation in off-trail areas, although minor, would occur . Amounts of undisturbed, resting and feeding areas for waterfowl and other wetland wildlife would remain the same.	Impacts such as trampling of vegetation in off-trail areas, although minor, would occur over a slightly larger area. Amounts of undisturbed, resting and feeding areas for waterfowl and other wetland wildlife would remain the same based on the administration of Refuge-specific special hunts.
Migratory Birds	Populations fluctuate primarily in response to natural cycles not hunting.	Estimated no increase in take from Refuge lands. Populations fluctuate primarily in response to natural cycles not hunting.
Upland Game	Populations fluctuate in response to natural cycles not hunting.	Estimated no increase in take from Refuge lands, except for eastern red squirrel and American crow. Estimated increase intake from Refuge lands: 5 eastern red squirrels and 20 American crows. Populations fluctuate primarily in response to natural cycles not hunting.
Big Game	Populations fluctuate in response to natural cycles, including habitat damage and disease, not hunting.	Estimated increase in take from Refuge lands: 25-35 deer Populations fluctuate primarily in response to natural cycles not hunting.
Furbearers	Populations fluctuate in response to natural cycles not hunting.	Estimated increase in take from Refuge lands: 4 coyotes, 2 red foxes, 2 gray foxes, 2 raccoons, 2 opossums, and 2 striped skunks. Populations fluctuate primarily in response to natural cycles not hunting.
Threatened and Endangered Species	No impact.	No impact.
Historic and Cultural Resources	No impact.	No impact.
Provides for priority public uses	Yes, satisfies the mandates of the 1997 Refuge Improvement Act.	Yes, satisfies the mandates of the 1997 Refuge Improvement Act.
Provides for simultaneous hunting and non-hunting activities	Yes	Yes

Table 6.4 – Comparison of Environmental Impact by Alternative (Continued)

Resource Impact	Alternative A (No Action)	Alternative B (Preferred)
Recreational Use	User conflicts are uncommon and mitigated through management actions.	User conflicts are uncommon and mitigated through management actions.
	Non-hunting recreational use will remain the same.	Non-hunting recreational use will remain the same.
	Hunting recreational use will remain the same or decrease.	Hunting recreational use will increase due to the addition of new species and more general public hunt opportunities.
	Does not meet public desire for increase in overall hunting opportunities.	Would slightly increase hunting opportunities for overall hunting opportunities.
	Opportunities (land base) for Special Use Permit hunts remain the same.	Opportunities (land base) for Special Use Permit hunts increase significantly.
Meets the needs of partners and desires of the public	Would not meet the preference of the state and hunting public to increase hunting opportunities.	Would meet the preference of the state and hunting public to increase hunting opportunities.
	Would not reduce the deer population in urban portions of the Refuge via sport hunting.	Would reduce the deer population in urban portions of the Refuge via sport hunting.
	Does not increase opportunities for youth and hunters with disabilities.	Does not increase opportunities for youth and hunters with disabilities.

7.0 PREPARERS

The following individuals cooperated in the preparation of this document:

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Vicki Sherry, Wildlife Biologist, U.S. Fish and Wildlife Service, Minnesota Valley National Wildlife Refuge, Bloomington, Minnesota.

8.0 LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS CONTACTED

Communities, Conservation Groups and Partner Organizations

Audubon Minnesota
Capable Partners
Carver County Administrator
Carver County Parks
City of Arden Hill Community Development
City of Belle Plaine Administration
City of Bloomington Parks and Recreation
City of Bloomington Planning
City of Burnsville City Manager
City of Burnsville Parks, Recreation, and Natural Resources
City of Chanhassen City Manager
City of Chanhassen Park and Recreation
City of Carver Administrator
City of Carver Parks and Recreation Supervisor
City of Chaska Administrator
City of Chaska, Parks and Recreation Supervisor
City of Eagan Administrator
City of Eagan Parks & Recreation
City of Eden Prairie City Manager
City of Henderson Administrator
City of Jordan Administrator
City of Savage Administrator
City of Shakopee Administrator
City of Shakopee Director of Parks and Recreation
Dakota County Commission
Ducks Unlimited
Friends of the Minnesota Valley
Friends of the Mississippi River
Hennepin County Administrator
Hennepin County Comission
Izaak Walton League of America
Le Sueur County Commission
Metro Bowhunters Resource Base
Minnesota Deer Hunters Association
Minnesota Land Trust
Minnesota Deer Hunters Association
Minnesota Department of Natural Resources
    Central Region Headquarters
    Division of Wildlife
    Division of Parks and Trails
    Ecological Services
Minnesota Valley National Wildlife Refuge Trust, Inc.
Minnesota Waterfowl Association

National Wild Turkey Federation
Pheasants Forever
Refuge Friends, Inc.
Scott County Administrator
Scott County Natural Resources Director
Sibley County Commission
The Nature Conservancy
Three Rivers Park District
Trust for Public Land

Print Media
Carver County News
Chaska Herald
Henderson Independent
Jordan Independent
Minnesota Outdoor News
Saint Paul Pioneer Press
Shakopee Valley News
Star Tribune
The Belle Plaine Herald

Federal, State, and Local Elected Officials
U.S. Representative Collin Peterson
U.S. Representative Tim Waltz
U.S. Representative Erik Paulsen
U.S. Representative Michele Bachmann
U.S. Representative Betty McCollum
U.S. Senator Amy Klobuchar
U.S. Senator Al Franken
Representative Jim Abeler, District 35
Representative Peggy Scott, District 35
Representative Joyce Peppin, District 34
Representative Kurt Zellers, District 34
Representative Bob Gunther, District 23
Representative Tony Cornish, District 23
Senator Warren Limmer, District 34
Senator Branden Peterson, District 35
Senator Julie Rosen, District 23

9.0 APPROVALS

Submitted by:

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Tim Bodeen, Project Leader Date

Concur:

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James T. Leach, Refuge Supervisor Area 3 Date

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Charlie Blair, Regional Chief Date
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Approved:

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Thomas O. Melius, Regional Director Date
Region 3, U.S. Fish & Wildlife Service

APPENDIX A – REFERENCES

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APPENDIX B – ADDITIONAL FIGURES

The following maps show landmarks, parking lots, and current hunting activities for 11 of the 12 Refuge Units (except Round Lake Unit).

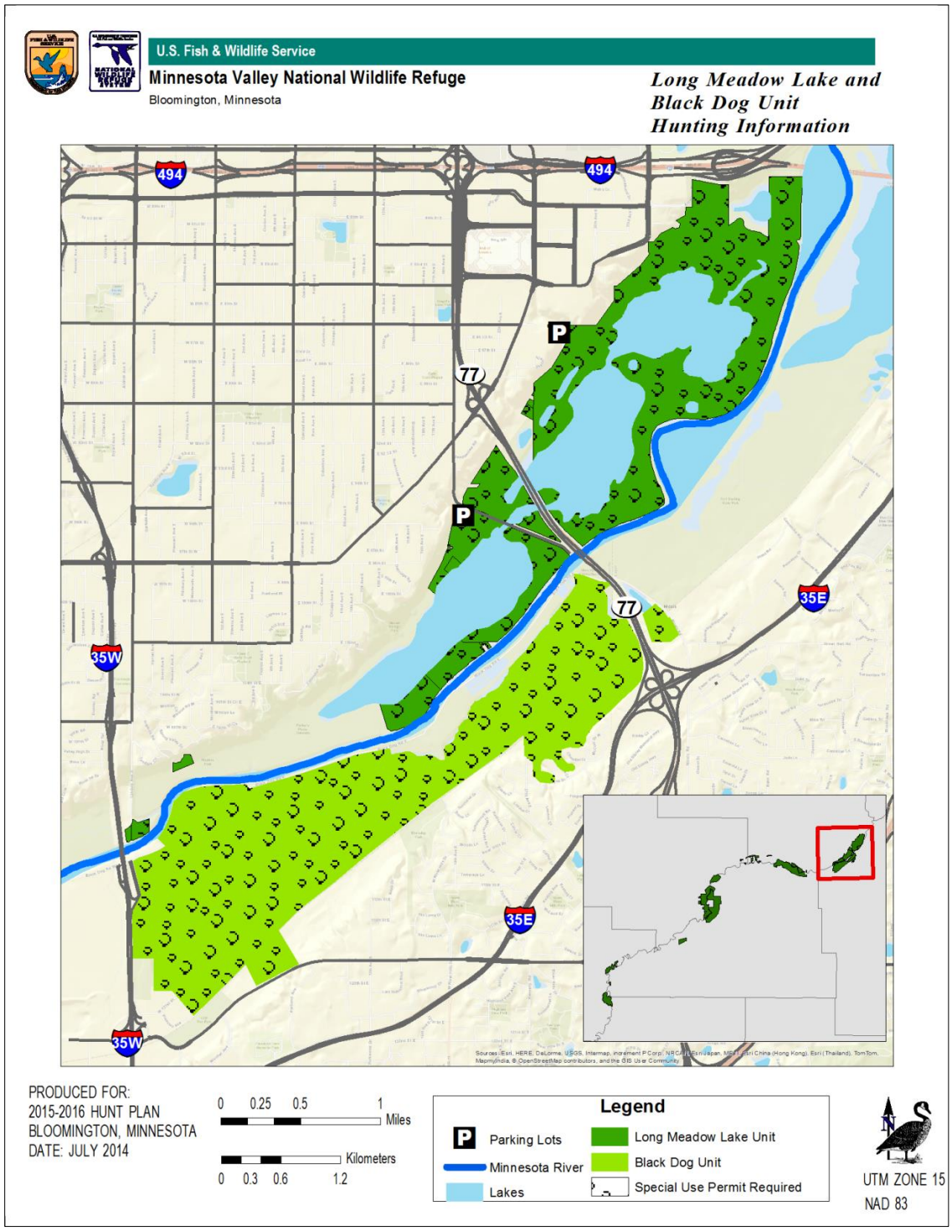

Figure B-1: Long Meadow and Black Dog Unit Current Hunting Opportunities.

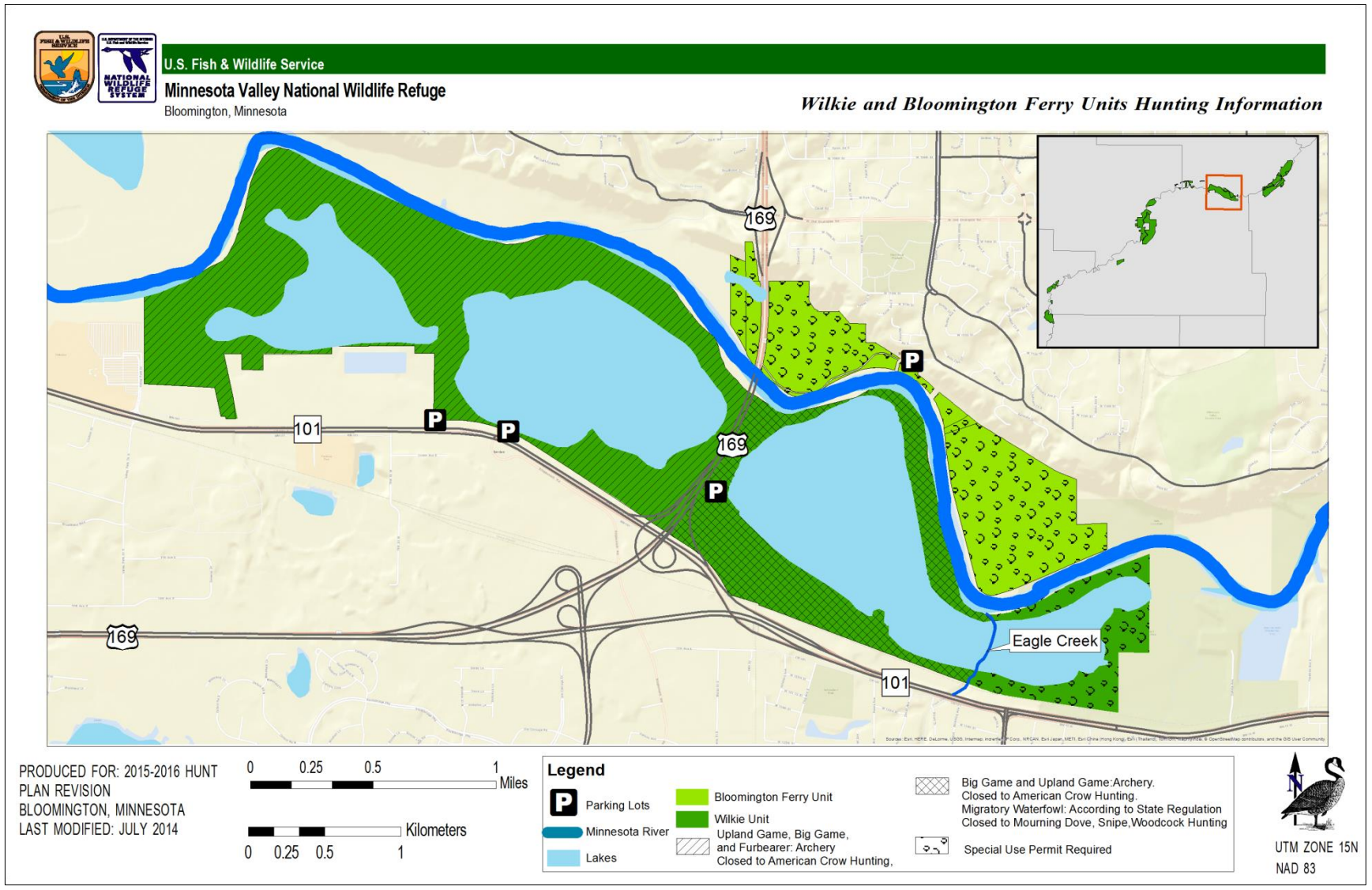

Figure B-2: Wilkie and Bloomington Ferry Units Current Hunting Opportunities.

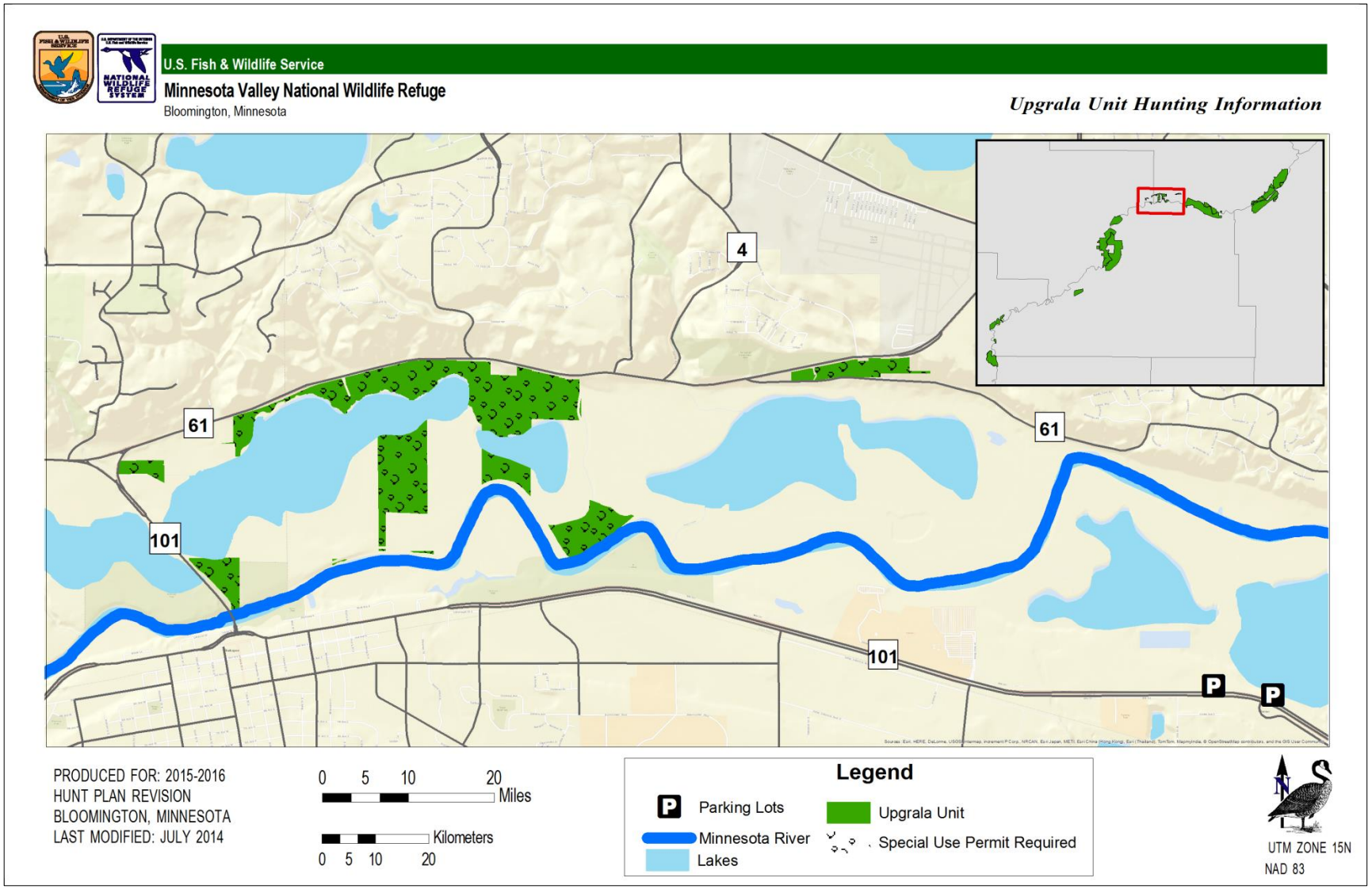

Figure B-3: Upgrala Unit Current Hunting Opportunities.

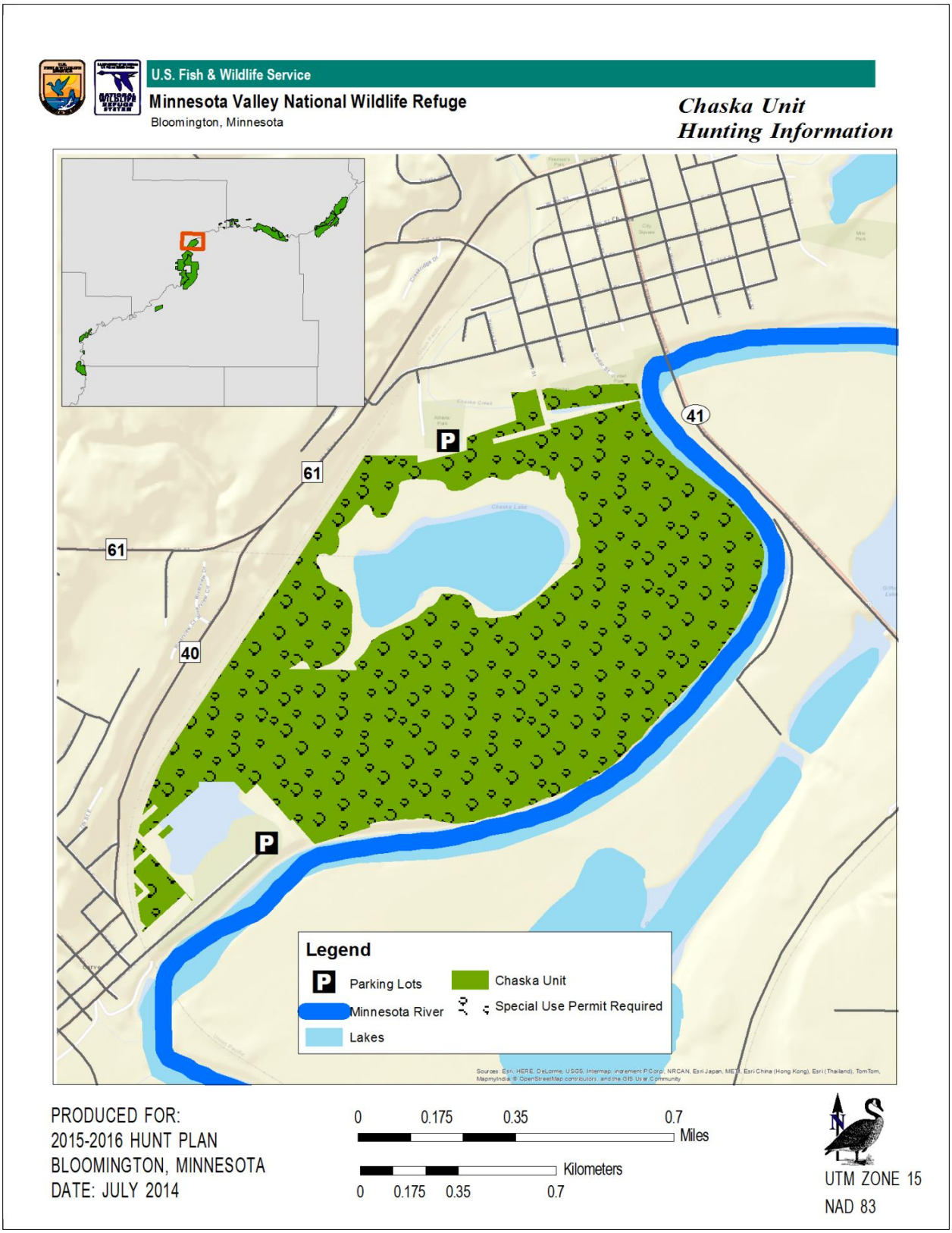

Figure B-4: Chaska Unit Current Hunting Opportunities.

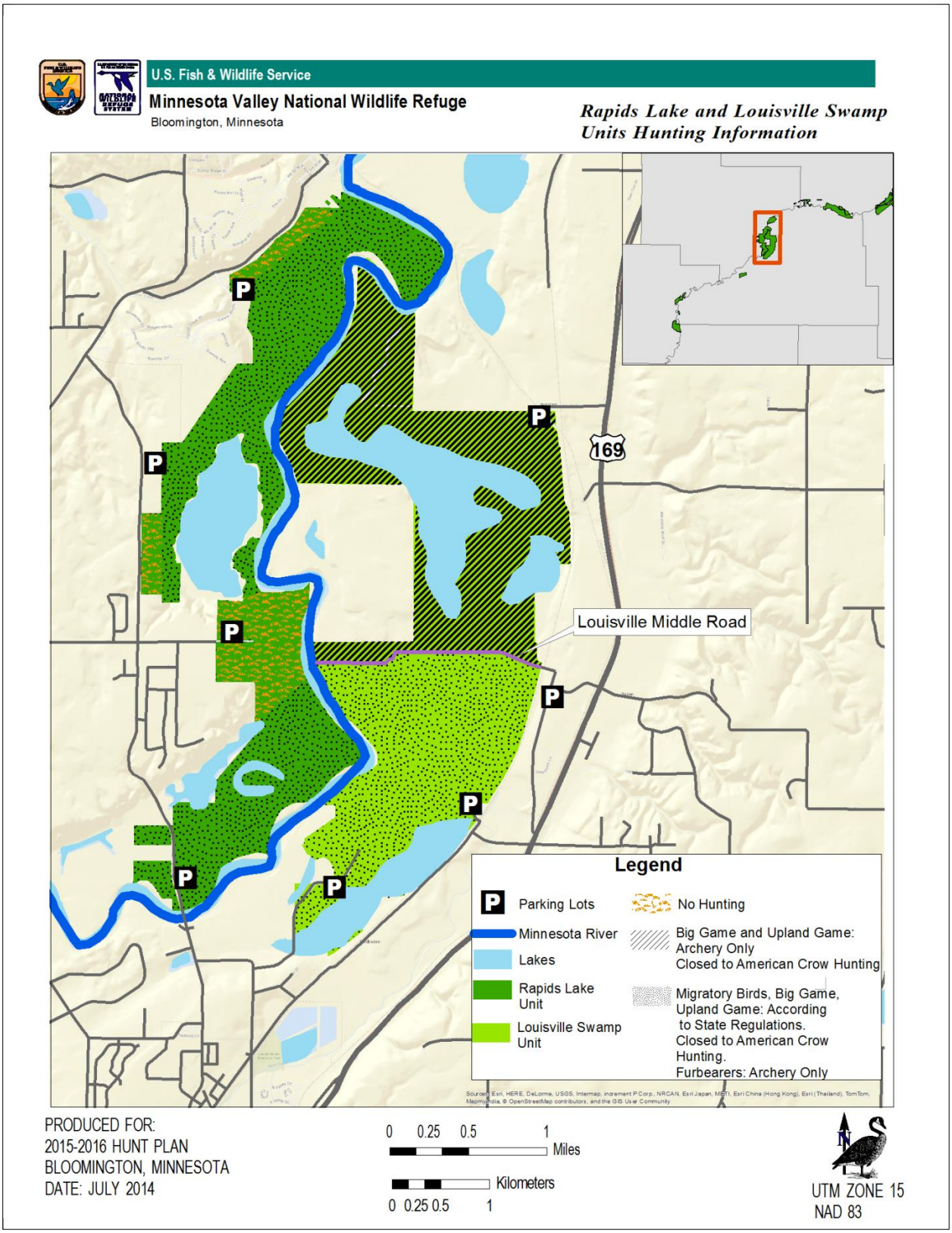

Figure B-5: Rapids Lake and Louisville Swamp Units Current Hunting Opportunities.

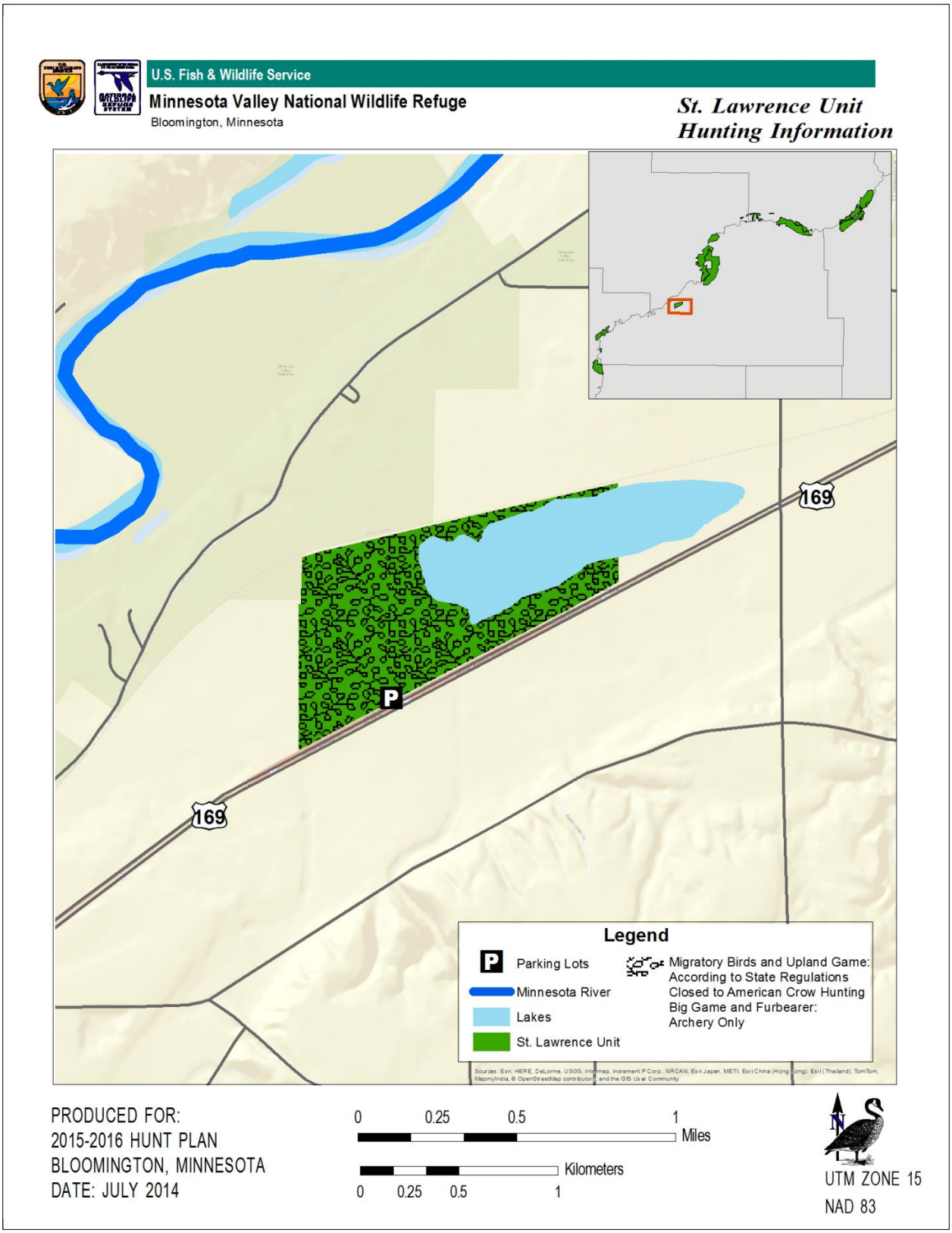

Figure B-6: St. Lawrence Unit Current Hunting Opportunities.

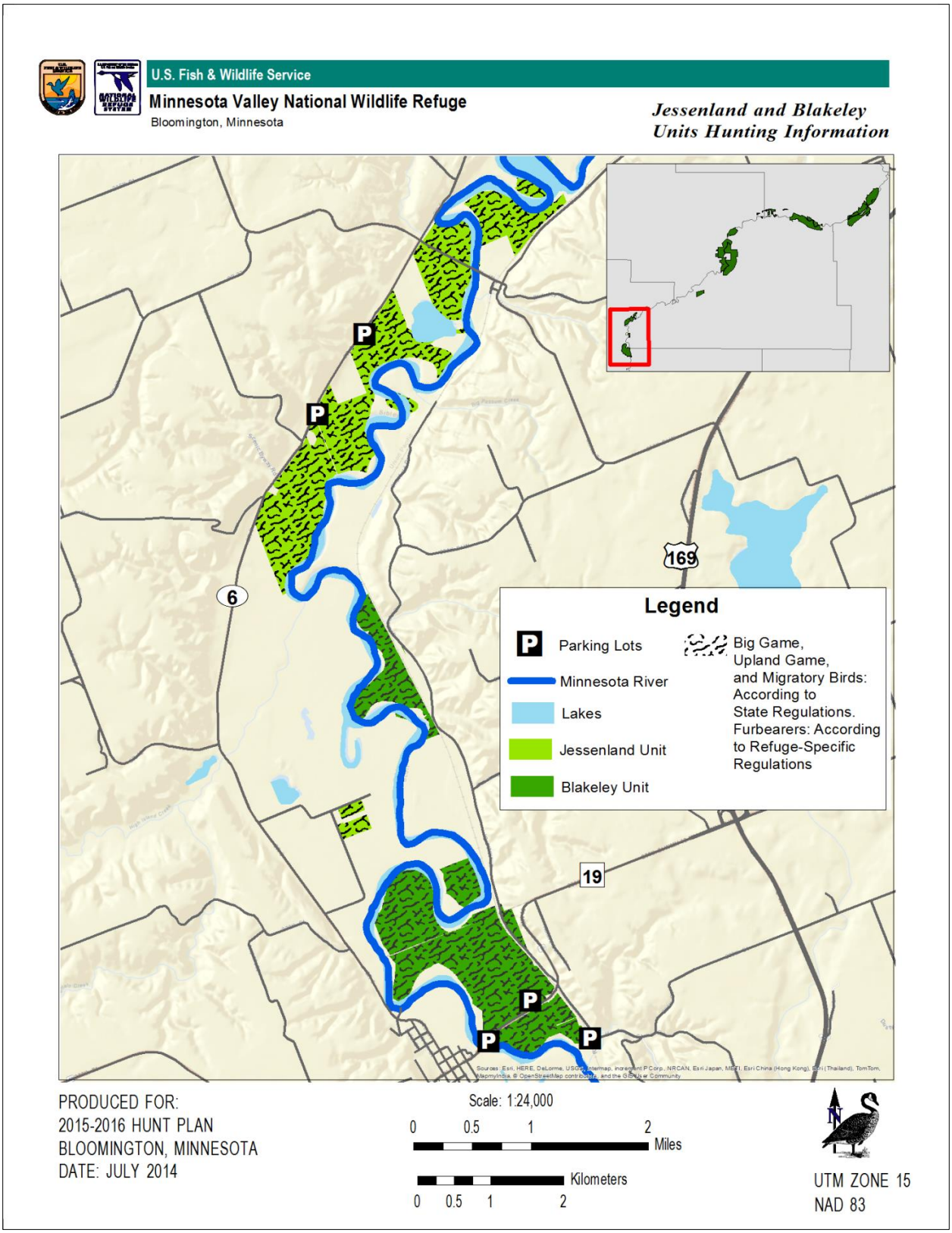

Figure B-7: Jessenland and Blakeley Units Current Hunting Opportunities.

APPENDIX C - CONSULTATION AND COORDINATION WITH OTHERS

The following consultation and coordination efforts were conducted in the preparation of this document:

In preparation for the Refuge's CCP, issue-based focus groups were established to discuss specific Refuge issues. One of these groups, the Recreational Users Focus Group, was made up of individuals representing neighboring counties and cities, State agencies, and other groups such as the Minnesota Wildlife Federation, Minnesota Waterfowl Association, Minnesota River Valley Audubon Chapter, and several public user groups. This group discussed all recreational uses including hunting on the Refuge. Seven open houses were also conducted during 1999 with the primary purpose of obtaining public input into the future direction of the Refuge and the District. Both the focus groups and public meetings led to the development of goals for the draft CCP. A public review period followed the release of the draft plan. In September 2004, the final CCP for the Refuge was approved. A goal of the CCP for the Refuge and District is to provide no less than 14,000 quality hunting experiences for a variety of populations per year. Seventy-five percent of the hunters will report no conflicts with other users, a reasonable harvest opportunity and satisfaction with the overall experience.

In 2004, Refuge staff proposed changes to the current Hunting Plan. In March 2004, Hunting Chapter scoping was conducted with staff from the MNDNR Parks and Wildlife offices to get input on the proposed alternatives for hunting programs on the Refuge and the Refuge began to develop a new Hunting Plan. Since then, the Refuge continued consulting and coordinating with the State regarding Refuge hunting activities on an informal basis.

On March 3, 2005, Refuge staff met with their counterparts from the MNDNR to gather input on the proposed changes to the hunt program. The following staff was in attendance: Diana Regenscheid and Tim Bremicker (Wildlife), Chuck Kartak, Mark Cleveland, and Frank Knoke (Parks), and Scott Carlson (Law Enforcement). Several concerns were raised. A second meeting was held in November and a comment letter was received during March, 2006.

During June of 2005, Londell Pease, Planner for the City of Bloomington, was contacted and provided information on proposed deer hunting in the Bloomington Ferry and Long Meadow Lake Units. He had no concerns with the proposal but asked a proposal be submitted to the City Council for their review and comment.

In November, 2005, the Service again met with staff from MNDNR Parks and Wildlife offices to discuss and gather input on the proposed alternatives for the hunting programs of the Refuge.

During December, 2005, the Service contacted staff from the City of Bloomington concerning the proposed alternatives for hunting on the Refuge within the city.

During May, 2006, the Service contacted staff from the City of Carver concerning the proposed alternatives for hunting on the Refuge.

During July, 2006, a letter was sent to the Administrator of the City of Carver, Jim Elmquist, asking if a variance could be granted to the Service to exempt Refuge lands within the city limits from permit requirements and use of single projectiles for hunting. The City did not grant the variance. On October 16, 2006, the Refuge Manager met with the Carver City Council and City Administrator concerning a request to grant an exemption to the Service to specific City ordinances concerning hunting on Refuge lands that fall within City limits.

In July 2006, Refuge staff met with Dave Guzzi, from Capable Partners Inc., on the Bloomington Ferry Unit where hunting for persons with disabilities is proposed. He said the site would work fine for their program and recommended we move ahead with the proposal to open the area to hunting for turkey, deer and upland game for hunters with disabilities. The Refuge has continued its partnership with Capable Partners.

In the fall of 2007 and 2008, the Refuge met with the City of Bloomington, MNDNR, and Three Rivers Park District to coordinate collection of deer population data. The four agencies also developed plans for a deer culling program focused on natural areas within the City of Bloomington. The culling program was implemented by agency staff without the participation of the general public. From 2009 – 2011 the Refuge has continued to monitor deer populations on its urban units but has not participated in any removal activities.

As in previous years, from 2008 - 2010, the Refuge annually coordinated a Young Waterfowlers program in partnership with the Minnesota Waterfowl Association.

In 2009 the Refuge renewed its efforts to develop a new Hunting Chapter and moved forward with a 2010 Hunting Chapter based upon earlier formal coordination with the MNDNR as well as the intervening informal discussions. The Refuge solicited comments regarding this Hunting Chapter from the MNDNR, as well as resource managers from local units of government. Favorable comments were received on the 2010 Hunting Chapter.

In 2010, the Draft 2011 Hunting Chapter and supporting Draft EA were sent to MNDNR Area and Regional Managers in the Divisions of Fish and Wildlife and in the Division of Parks and Trails. The MNDNR strongly supported the proposed changes to the Hunting Chapter.

In 2011, the Draft 2012 Hunting Chapter and supporting Draft EA were sent to MNDNR Area and Regional Managers in the Divisions of Fish and Wildlife and in the Division of Parks and Trails. As in previous years, the MNDNR strongly supported the proposed changes to the Hunting Chapter.

In 2014, the Draft 2015 Hunt Plan and supporting Draft EA were sent to MNDNR Area and Regional Managers in the Divisions of Fish and Wildlife and in the Division of Parks and Trails. Awaiting response from MNDNR.

Following the adoption of this Hunting Plan, consultation and coordination with the MNDNR and others regarding its annual implementation will be a combination of formal and informal activities based upon the nature of the issues to be addressed.

APPENDIX D – RESPONSE TO COMMENTS ON THE HUNTING CHAPTER AND ENVIRONMENTAL ASSESSMENT

APPENDIX E – POLICY COMPLIANCE AND SUPPORTING DOCUMENTATION

The Refuge completed an Intra-Service Section 7 evaluation as required by Service policy for compliance with the Endangered Species Act. No Federally listed as threatened or endangered species occur in the areas the Refuge is proposing to hunt.

The Refuge informally consulted with the Regional Archeologist (Kluth 2009) regarding the need to initiate a cultural resources consultation with the State Historic Preservation Officer (SHPO. Because there are no ground disturbing or construction activities resulting from any alternatives proposed in the 2012 Hunt Plan, no formal consultation with the SHPO is required.